Submission on behalf of SMTW Environmental DAC

FOR DRAFT DECISION BY THE AIRCRAFT NOISE COMPETENT AUTHORITY

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SUBMISSION ON BEHALF OF SMTW ENVIRONMENTAL DAC

SUBMISSION DOCUMENTS

This submission is in response to ANCA's Aircraft Noise Consultation

Included in this submission are:

'**DAA Report 22.10.2021.pdf':**

Outlines the key challenges facing the communities of St Margarets and The Ward. The mitigation provided in the past and the planned mitigation for the future cannot protect the health of the population in these areas if night-time movements are allowed to continue or even increase. An expert study group needs to be appointed to focus on these communities. Serious engagement on relocation schemes needs to be put in place.

'Dublin_Airport_Noise_Medical_Report.pdf':

A health report summarising the latest research into adverse health effects from aircraft noise. The report was written by Professor Thomas Münzel MD, Head of the Department of Cardiology at the University Medical Center, Johannes Gutenberg University Mainz, Germany. Professor Münzel's research group focuses on environmental risk factors for cardiovascular disease with a focus on aircraft noise and air pollution. He has more than 1000 publications and a Hirsch index of 136. The report focuses on the latest research and particularly on the cardiovascular effects of night-time noise. The report also discusses the noise statistics from the revised EIAR.

'**HealthEffectsOfAircraftNoiseOnTheCardiovascularSystem.pdf'**

'**Video** - **"Health Effects Of Aircraft Noise on the Cardiovascular System"** '

Online presentation by Professor Münzel on the research on the health effects of aircraft noise on the Cardiovascular System

'**NMT 1 2 3 2016 2018 2019 Lmax events.xlsx'**

LAmax data given to the CLG group by the daa via email on January 14th, 2022.

SUBMISSION ON BEHALF OF SMTW ENVIRONMENTAL DAC

HSE.pdf

Submission by the HSE Environmental Health section to the Planning Authority for Planning Application F20A/0668, dated January 28th, 2021.

1.0 DRAFT DECISION

SUMMARY

The key points of this submission on the ANCA's draft decision are listed under the following headings:

- Planning Conditions 3(a)-3(d)
- EIAR
- Forecasts
- Insulation Scheme
- Population and Human Health
- Cost-effectiveness analysis
- 2025 Proposed
- Consultation
- 2018/2019 Baseline for NAO
- Difference maps
- Objective DA07
- Population most affected

Planning Conditions 3(a)-3(d):

- Dual runway departures between 06:00-08:00 conflict with Option 7(b) and planning conditions 3(a)-3(c) which state 'Either/Or'.
- Conflicts with Condition 3(c); Runway 10R should not be used for take-off as outlined in Robert Thornely-Taylor's advice given to ABP during the Oral Hearing in 2007.
- For Easterly departures, during peak times aircraft will be routed over Malahide at Robswall Park. As a result, large sections of Malahide and Swords are newly enclosed in 40dB Lnight contour for the first time
- 30 degrees divergence was not considered during the 2016 consultation (only 15 and 75 degrees)

EIAR:

- EIAR only considers future scenarios capped at 32m passengers. This is a serious omission from the EIAR as the realistic future scenario is not presented. The daa had previously submitted an application to increase passenger numbers from 32-35m and pre-planning documentation shows the daa were planning to lodge an application to increase passenger numbers to 40m.
- This is 'Project-splitting' and both applications should be considered as a single application.
- Chapter 9 Traffic and Transport does not consider passenger number beyond 32m. The 32m cap was imposed primarily due to Transport capacity constraints. This has not been addressed in this EIAR and as a result the EIAR is inadequate.
- EIAR fails to consider not opening the runway before 2025 in their '*do-nothing*' scenario. The Airport could cater for 32.9m passengers in 2019 using a single main runway. There is no need for a change to planning for 32m passengers for 2025.
- The EIAR states that the application is not an application for development consent for a project within the meaning of the EIA Directive. However, a pre-planning draft EIA scoping document by AECOM and a review of the scoping document for Fingal County Council by Brady Shipman Martin determined that it is not possible to rule out the potential for significant environmental effects and an EIA is therefore required.

Forecasts:

- Mott MacDonald report shows that the daa can achieve **42m** Passengers in 2040 **whilst keeping restrictions**, providing proof that the objectives of the National Aviation Policy (2015) can be achieved whilst protecting the health of residents.
- Retaining the operating restrictions does not hinder growth.
- The daa and Fingal County Council in the Dublin Airport Noise Action Plan claim that aircraft types have changed in Dublin Airport between 2003 to 2017 resulting in quieter aircraft. However, noise exposure levels grew exponentially in line with movement increases.
- Noise levels submitted by the daa to the St Margarets The Ward group for various noise emissions for specific aircraft indicate that there is very little difference in the actual measured noise level between the older and newer aircraft. Therefore, the assertions claimed regarding fleet replacements is totally flawed
- Using daa's own forecasts for arrivals and departures there appears to be no reason for proposing a change from the current flight restrictions as there is little or no difference in proposed movements during 06:00-08:00.
- The daa's figures for the number of movements lost up to 2025 are grossly overestimated by not fully utilizing the available 65 movements limit.
- daa's forecasts show ample capacity between 07:00-23:00 to cater for increased passenger numbers.
- In their Tap 2028 Prospectus the daa outline risks related to the North Runway. It discusses the two planning conditions, namely condition 3(c) and 5. It states that the current estimate of a decision from Fingal County Council is quarter 3, 2022. And if the decision is appealed, a decision from the appeals board is anticipated in quarter 1, 2024. Therefore, the loss of passenger numbers presented in the Mott MacDonald report are unrealistic as the planning conditions will not be amended before then. The Mott MacDonald figures are theoretical and inaccurate.
- As a result, the cost benefit analysis performed by the daa based on losses accrued up to 2025 are purely theoretical and always going to occur. It's a fictional cost benefit analysis.
- 2025 is a premature timeframe used in this planning application. The sole intention of this application is to remove the planning conditions before applying for an increase in passenger numbers.

Insulation Scheme:

- Insulation installed in houses already insulated by the daa fails to mitigate against adverse noise levels as outlined in the report from the MLM Group.
- Insulation Scheme proposed by ANCA **insulates less houses** than in the planning application by the daa. A large number of houses in Coolquay, The Ward, St Margarets and Kileek Lane have been removed.
- ANCA did not use the criteria 2 specification from the daa in their cost-effectiveness analysis. They only used criteria 1. The daa included all dwellings >55dB Lnight in 2025 for criteria 1 and all dwellings >50dB Lnight with a 9dB increase in 2022 Proposed compared with 2025 Permitted for criteria 2.
- Insulation Scheme only applies to the cohort deemed 'very significantly' affected. No mitigation for 'moderately' or 'significantly' affected dwellings.
- ANCA and the daa are proposing noise insulation as a mitigation measure to night-time noise increases within the St Margarets The Ward communities. This is contrary to Fingal County Council's advice within their own Development Plan, and testing carried out within the St Margarets The Ward area on housing that has already been insulated by the daa recently indicates the guidance referred to by Fingal County Council and the WHO cannot be achieved and will cause serious health issues of those affected by the proposed increase in night time noise.
- ProPG and WHO NNG Guidelines state an internal noise level of no more than 10-15 events > 45dB LAmax.
    - Based on N60 contours, 18,959 dwellings >= 10 events and 5,282 dwellings >=25 events for 2025 Proposed scenario. Mitigation for these dwellings is not taken into account. The cost-effectiveness analysis does not consider these large number of dwellings and so the application of the Balanced Approach is flawed.
- Conflicts with Fingal Development Plan as not all houses in Noise Zone B are being offered insulation,
- RFI #93 states that over-heating was not taken into account for insulation purposes. The response also does not take into account LAmax values as specified in the ProPG Guidelines and in BS8233:2014 section 7.7.2 note 4.
- No consultation with people potentially affected and requiring insulation.
- No medical expertise used in the analysis to determine the criteria for insulation.
- Large number of warehouses and offices in close proximity to Dublin Airport exposed to noise levels >60dB Lden and some exposed to levels >65dB Lden, potentially exceeding BS8233:2014 limits.

Population and Human Health:

- Population and Human Health chapter in the EIAR uses the incorrect HSD values for 2025 Proposed, therefore grossly underestimating the health effects of the Proposed scenario.
- **79,405** people will be **Highly Annoyed** and **37,080** will be **Highly Sleep Disturbed** in 2025.
- The Health Summary conclusion of Potential Residual Effects were **negative (-)** for Air Quality, Noise and Vibration, and Neighbourhood Amenity for 2025.
- Conclusion from report and presentation from Professor Münzel, leading Cardiologist and noise expert, is that all night-time flights should be banned in order to protect health.
- Submission from HSE Environmental Health to Fingal County Council states that all efforts should be made to minimize the number of people subjected to the adverse health effects of aircraft noise by reducing aircraft noise levels to below the WHO safe limits of 45dB Lden and 40dB Lnight.

Cost-effectiveness:

- The reports on cost effectiveness submitted by the daa exclude quantification of costs associated with the adverse health effects inflicted on residents. This item was specifically requested by ANCA and was not provided by the daa. We in St Margarets The Ward as citizens were expecting this information to be presented to us as requested by ANCA. We refer to our submission on Public Health where we have evaluated the costs associated with the adverse health effects inflicted on us which indicated that the total yearly cost based on the 2019 figures is a staggering **€600** million euro. How are we expected to suffer these costs to protect our health?
- The cost effectiveness analysis (CEA) submitted by Ricondo does not meet the requirements of EU598/2014 as it does not take into account of the current flight restrictions in place at Dublin Airport. The report therefore is misleading and inaccurate.
- The cost effectiveness analysis as submitted by Ricondo does not take into account the costs associated with Carbon Emissions nor does it indicate the costs in meeting Ireland's requirements under the Climate Action and Low Carbon (Amendment) Act 2021 for the proposed revision to the current restrictions.
- The EIAR submitted does not meet the requirements set out in the EPA guidance as it does not take into account the foreseeable and planned increase in passenger numbers above 32 million passengers and is considered 'project splitting'.

2025 Proposed:

- The revised noise statistics for 2025 Proposed versus the original 2025 Relevant Action reveal that the daa predictions are worse now with the revised EIAR that the original EIAR in December 2020. The differences and reasons for these changes in noise levels are not explained by the daa or ANCA.
- Population >40dB Lnight increases from 174k to 268k; the number highly sleep disturbed increases from 24.4k to 37k; the area of the 40dB Lnight contour increases from 302 to 311.5km^2. No explanation provided.
- The number of people forecast to be highly annoyed in 2025 Proposed is 79,405 and highly sleep disturbed is 37,080.
- The number of people forecast to be at least significantly adversely affected in 2025 Proposed compared to 2025 Permitted is **11,494**.
- The number of people forecast to suffer '**significant'** adverse residual effects after mitigation in 2025 is **10,560**.

Consultation:

- The daa refused consultation with the CLG group to explain the additional information in the revised application.
- ANCA never made contact with the CLG group.
- No leaflet drops by ANCA to the residents most affected. Only 3 online webinars where no inter-action was facilitated except by typing questions.
- No community meetings held even after the removal of Covid restrictions.
- Consultation documentation in 2016 makes no mention of large parts of Malahide being included in 40dB Lnight contour.
- In 2016, no mention of large area of St Margarets, The Ward, and Coolquay requiring night-time insulation.
- Large number of housing units developed since 2016 and never consulted.
- No consultation on the WHO 2018 Guidelines.
- 30 degrees divergence was not considered during the 2016 consultation (only 15 and 75 degrees) were mentioned.
- Divergence not considered in original planning permission for North Runway. All Runways had straight out departures.
- No consultation with people potentially affected and requiring insulation.

2018/2019 Baseline for NAO:

- The selection of 2019 or 2018 as the baseline for noise comparison does not meet the requirements of Directive 2002/49/EC as required by the Aircraft Noise (Dublin Airport) Regulation Act 2019. The escalating noise reported in noise action plans dating back to 2008 have been ignored with respect to reducing and prevention of noise at Dublin Airport
- The selection of 2019 as a baseline for noise is contrary to target 2 of the EU Action Plan "Towards zero pollution for air, water and soil" adopted by the European Commission on 12th of May 2021, as the targets are not set using 2017 as the baseline. The selection of 2019 as a baseline is contrary to ANCA's own SEA document used to screen the project.
- The number of people in the 2018 57dB LAeq16 contour is 9177. The number of people in the 2019 57dB LAeq16 contour is 9706. At the Oral Hearing in 2007 evidence was provided by the daa by way of additional information showing 5403 people >57dB LAeq16 in 2007, increasing to 7431 in 2025 with Option 7b High Growth (43m). The growth in figures were deemed an unacceptable rise in noise levels by Mr Thornely-Taylor and An Bord Pleanála at that time. Therefore, 2018 or 2019 should not be accepted on these same grounds as the population >57dB LAeq16 is higher than the unacceptable Option 7b High Growth levels.
- The daa have not provided population and dwelling figures for the lower contours for 2016. They only provided values for >55dB Lden and >50dB Lnight. They did provide the contour maps and area sizes at the lower contours and therefore it should be a simple process to provide these using the 2016 census data. ANCA should have insisted on them.
- Comparisons of 2016 against the predicted scenarios cannot be made for HA and HSD values at the lower contours.
- 2018 had high use of the crosswind runways 16-34 due to crosswinds and runway maintenance. Runways 16-34 will be restricted to <1% when the North Runway opens. Therefore, there will be a lot less people affected in Dublin City when the runways open compared with 2018. This is not related to the Relevant Action proposal and the number of people benefitting from the restrictive use of runways 16-34 should not be apportioned as a benefit from this Relevant Action proposal. Noise statistics should be generated for the cross runways solely to identify the numbers affected in previous years to ensure no benefit is incorrectly attributed to the Relevant Action.
- 2019 was the worst year on record for noise levels
- 2018 was the worst year on record for noise levels where the 32m passenger cap was not breached.

- Data from the 3 Rounds of the Environmental Noise Directive (END) show an escalating noise problem since 2006.
- ANCA's document on the determination of a noise problem states that "*Over the period 2006 to 2019 the population reported to be exposed to night-time noise above 50dB Lnight had increased by a multiple of* ***seven***".
- From 2016 to 2019 the size of the daytime noise 45dB Lden contour grew from 370km^2 to 745km^2
- From 2016 to 2019 the size of the night-time noise 40dB Lnight contour grew from 212km^2 to 328km^2.

Difference maps:

- No difference maps provided as per Annex IV of 2002/49/EC.

Objective DA07:

- The Relevant Action proposal undermines Objective DA07 of the Fingal Development Plan which states that "*time based operational restrictions on usage of a second runway are not unreasonable to minimize the adverse impact of noise on existing housing within the inner and outer noise zone*".

Population most affected:

- No noise predictions provided for location reference points under the flight path of the North Runway operating in a Westerly direction. This will be the population most affected by noise at Dublin Airport as 70% of the time take offs will be to the West and the North Runway is the preferred Runway for Westerly departures. This is a major flaw with the EIAR as the population mostly affected are not considered.
- ANCA's draft decision fails to take account of the population who will be subjected to the cumulative effect of aircraft noise 24 hours per day. Large sections of St Margarets The Ward will be exposed to high levels of daytime noise and high levels of night-time noise. A significant proportion of this population does not qualify for insulation under the daytime >63 LAeq16 scheme or the new night-time scheme. In particular dwellings between the two runways and those to the north of the North Runway.
- ANCA have performed no analysis on the health status of the residents of St Margarets The Ward in order to consider their health needs.
- Due to the Covid-19 pandemic, many people are working from home and will be subjected to more aircraft noise than in the past.

2.0 BASELINE REFERENCE YEAR FOR NAO (2019)

SUMMARY

- The selection of 2019 or 2018 as the baseline for noise comparison does not meet the requirements of Directive 2002/49/EC as required by the Aircraft Noise (Dublin Airport) Regulation Act 2019. The escalating noise reported in noise action plans dating back to 2008 have been ignored with respect to reducing and prevention of noise at Dublin Airport
- The selection of 2019 as a baseline for noise is contrary to target 2 of the EU Action Plan "Towards zero pollution for air, water and soil" adopted by the European Commission on 12th of May 2021, as the targets are not set using 2017 as the baseline. The selection of 2019 as a baseline is contrary to ANCA's own SEA document used to screen the project.
- The figures presented by the daa for 2018 as a baseline are incorrect as during 2018 the crosswind runway was used extensively and therefore the figures are distorted and not accurate with respect to reviewing the current application.
- At the Oral Hearing in 2007 for the North Runway, figures were presented comparing 2007 levels to a 2025 forecast. The increase in population exposed with the 2025 forecast scenario were deemed unacceptable by An Bord Pleanála's consultant, Mr Rupert Thornely-Taylor. The figures in the daa's current proposal are higher again. In 2007 the forecast noise exposure figures were deemed to be unacceptable from a health point of view. How can they be acceptable now?
- The health effects proposed to be inflicted on the St Margarets The Ward community have not been evaluated by either the daa or ANCA. The real cost due to health effects alone is calculated at more than €600 million per annum due to the proposal.
- The daa and Fingal County Council in the Dublin Airport Noise Action Plan claim that aircraft types have changed in Dublin Airport between 2003 to 2017 resulting in quieter aircraft. However, noise exposure levels grew exponentially in line with movement increases.

- Noise levels submitted by the daa to the St Margarets The Ward group for various noise emissions for specific aircraft indicate that there is very little difference in the actual measured noise level between the older ad newer aircraft. Therefore, the assertions claimed regarding fleet replacements is totally flawed
- Using daa's own forecasts for arrivals and departures there appears to be no reason for proposing a change from the current flight restrictions as there is little or no difference in proposed movements

NOISE PROBLEM

Under the Aircraft Noise (Dublin Airport) Regulation Act 2019, the Aircraft Noise Competent Authority (ANCA) carried out a screening process to identify whether the Proposed Development may give rise to a noise problem (https://www.fingal.ie/sites/default/files/2021-02/20210209-aspects-of-a-potential-noise-problem-assoc-with-f20a-0668-.pdf).

Following this screening study, ANCA determined "that the proposed development may significantly influence the evolving noise climate at Dublin Airport to the extent that presents a noise problem that requires detailed assessment" (https://www.fingal.ie/sites/default/files/2021-02/20210210-anca-recommendation-report-.pdf) and recommended the following:

1. The determination of a noise problem at Dublin Airport, in the context of the 2019 Act and the Aircraft Noise Regulation, arising from the Application for a Relevant Action ref. F20A/0668;

2. The establishment of a Noise Abatement Objective for Dublin Airport.

3. The commencement of the process of aircraft noise regulation prescribed by Section 34C of the Planning and Development Act of 2000 including the application of the ICAO Balanced Approach.

To support their application the daa have developed a candidate NAO (cNAO). The summary objective of the cNAO is:

"To limit and reduce the adverse effects of long-term exposure to aircraft noise, including health and quality of life, so that long-term noise exposure, particularly at night, does not exceed the situation in **2018**. This should be achieved through the application of the Balanced Approach".

Section 2.1.8 of the EIAR states that 2018 was chosen as it was the most recent year with full data available when the relevant action assessment process commenced. It was also the first year of the 2018-2023 Dublin Airport Noise Action Plan (NAP). However, the NAP only considered data up to 2016, from the 3rd Round of the END, and data from 2017 and 2018 was not considered. Therefore the 2018-2023 NAP did not consider the most up to date data available to it when it was approved in December 2019 by members of Fingal County Council.

The selection of the baseline year to compare noise against for the NAO is of paramount importance to protect the health and well-being of residents. In the noise problem screening document (https://www.fingal.ie/sites/default/files/2021-02/20210209-aspects-of-a-potential-noise-problem-assoc-with-f20a-0668-.pdf), from section 6.4 a discussion of the historic noise situation at Dublin Airport is given using the data from the 3 Rounds of the Environmental Noise Directive (END) in 2006, 2011 and 2016 and compared with 2018 and 2019. Table 5 shows the Lnight comparison.

Table 5 Reported Night-time Noise Exposure (L_{night}) for Dublin Airport

Noise Band Lnight dB(A)	Population Exposed				
	2006	2011	2016	2018	2019
50 - 54.9	1,800	1,200	6,200	11,600	12,300
55 - 59.9	200	200	400	700	1,400
60 - 64.9	0	0	0	0	100
65 - 69.9	0	0	0	0	0
>=70	0	0	0	0	0

Section 6.7 of the noise screening document by Noise Consultants states that “Over the period 2006 to 2019 the population reported to be exposed to night-time noise above 50 dB Lnight had increased by a multiple of **seven**”. 2018 was the noisiest year on record where the 32m passenger cap wasn’t breached (In 2019 the Airport handled 32.9m exceeding its planning permission).

It is also worth noting that the 2006 Lnight figures used in the noise screening document (Table 5 a) were not the figures presented in the 2006 NAP. The figures presented in the screening document are revised figures based on the 2016 census. The population of Fingal is given as 296214 in the 2016 census, 273051 in the 2011 census and 239992 in the 2006 census. As a result, using the 2016 census data for the 2006 Lnight calculation will inflate the figures as the population grew by 56k or 23% in that timeframe.

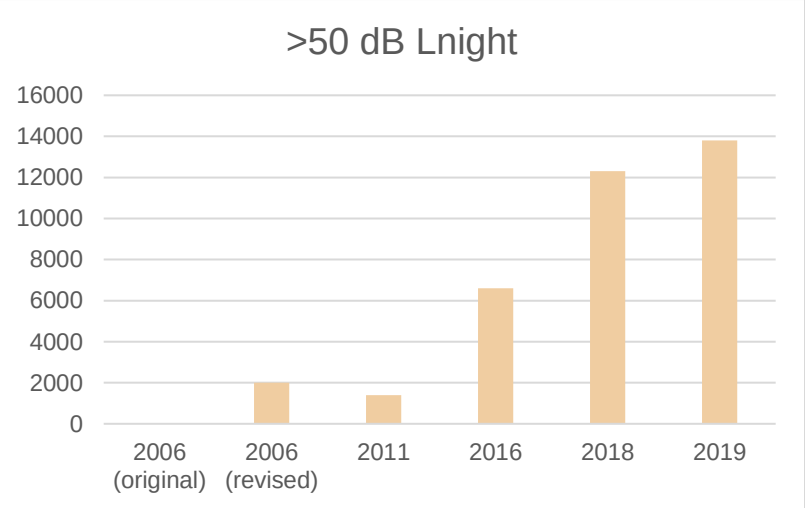
NOISE ACTION PLAN

The original statistics from the 2006 NAP show zero people affected <50 dB Lnight.

Noise Action Plan for Dublin Airport 2019 - 2023

Table 7 Population within Noise Level Band Data for Total Area L_{night}

Noise Band dB(A) L_{night}	2006 (original)	2006 (revised)	2011	2016
50 – 54.9	0	1,800	1,200	6,200
55 – 59.9	0	200	200	400
60 – 64.9	0	0	0	0
65 – 69.9	0	0	0	0
>= 70	0	0	0	0



The chart above clearly shows an escalating noise problem over the 3 Rounds of the END.

Comparing the >45 dB Lden and >40 dB Lnight contour sizes for 2016 and 2018 using the Reporting Templates https://www.fingal.ie/sites/default/files/2021-06/20210618-reporting-template-update.xlsx and https://www.fingal.ie/sites/default/files/2021-08/20210827-anca-reporting-template-update-2016-end.xlsx, it's very clear that the size of the contours increased significantly in 2018 compared to 2016.

Year	Population				Area (km^2)	
	>45 dB Lden	>40 dB Lnight	>55 dB Lden	>50 dB Lnight	>45 dB Lden	>40 dB Lnight
2016			20300	6600	370.5	212.8
2018	716726	307458	35482	12316	703.2	304.4
2019	754135	344912	34097	13838	745.8	328.4

Comparing the populations exposed to >55 dB Lden and >50 dB Lnight between 2016 and 2019, shows a significant increase in numbers affected. From the area contours above, it is evident that the increase in the population affected is due to the increase in the contours and not encroaching developments as specified by ANCA. The noise increased on the population and not the other way around. The >45dB Lden contour doubled in size from 2016 to 2019. The >40dB Lnight contour increased by 50% from 2016 to 2019. These are the contour limits defined by the WHO as leading to adverse health effects. Fingal County Council failed in its role under the END to limit and reduce noise and protect the health of the public. ANCA in its role as the Competent Authority also did nothing to combat noise when presented with the noise statistics for 2019. ANCA also failed to take action for the breach of the 32m cap even though the 32m passenger cap is an operating restriction which comes under its remit. This is a clear signal that ANCA/Fingal County Council has a conflict of interest and was unwilling to tackle the daa.

It is also worth noting that ANCA started the process of evaluating the noise situation at Dublin Airport when the daa lodged their application to increase passenger numbers from 32-35m in September 2019. The daa subsequently withdrew their application but ANCA failed to continue the process of evaluating the noise situation. They have the powers to request any noise data

from the daa but were unwilling to do so. It is clear that ANCA did not want to evaluate the noise situation unless the daa had a planning application submitted. One can postulate that ANCA did not want to jeopardise any future plans from the daa.

2019

2019 was the noisiest year on record at Dublin Airport and the year the passenger limit was breached. Fingal County Council failed to take the daa to task even when made aware of the planning breach.

There are no figures provided for 2016 for the lower contours of >45 dB Lden and >40 dB Lnight beyond which the WHO states lead to adverse health effects.

For 2019:

- **754k** people >45 dB Lden and **344.9k** people >40 dB Lnight.
- Over **13.8k** people affected >50 dB Lnight
- Over **34k** people exposed to >45 dB Lden.

At part 2 section 9(1) o the “Airport Noise (Dublin Airport) Regulations Act 2019” states:

“The competent authority shall ensure that the noise situation at the airport is assessed in accordance with the European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549 of 2018) and the Environmental Noise Directive”.

The Environmental Noise Directive 2002/49/EC required all member states to produce noise action plans in 2008 and thereafter evert 5 years.

Under Article 1(1) of the Directive is noted that “The aim of the\is Directive shall be to define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise”.

A noise action plan was produced in 2008 and 2013 for the Dublin Agglomeration which includes Dublin Airport. This noise action plan was produced by Dublin City Council, Fingal, South Dublin and Dun Laoghaire Rathdown County Councils.

In both of these action plans a decision-making matrix was presented. A value of 17 or more is suggested as the point where ‘Priority’ action shall be considered. In both action plans the St Margarets The Ward area had a value of 20 and therefore were categorised as an area of priority with respect to avoiding, preventing or reducing noise. Measures put forward in these action plans include flight restrictions.

Fingal County Council provided the noise action plan for 2018 for Dublin Airport. The priority matrix was not included in this plan.

Planning permission for the new North Runway was granted in 2007. Therefore, all the Local Authorities involved in the production of the noise action plans to date were aware of the planned runway. At item 6 of Annex IV of the Directive 2002/49/EC it states that “for the purposes of informing the citizens in accordance with article 9 and the development of action plans in accordance with Article 8, additional and more detailed information must be given, such as:

— difference maps, in which the existing situation is compared with various possible future situations”.

The noise mapping for the proposed new runway which had been granted permission was not presented in any of the noise action plans to inform citizens as required by the Directive. Both daa and ANCA therefore were fully aware of the escalating noise situation at Dublin Airport and the fact that as a result the St Margarets The Ward area was a prioritised area to prevent and reduce environmental noise.

The noise situation was known to be escalating and required action as far back as 2006.

These levels cannot be used as acceptable baseline levels to compare against. Using 2019 or 2018 for the NAO is detrimental to health of residents. The Local Authority and Competent Authority have allowed unsafe levels of noise to be inflicted on a significant number of residents according to the WHO Guidelines.

EU TENDER DOCUMENT

ANCA's publication 'Preliminary Assessment and Identification of a Noise Problem' (https://consult.fingal.ie/en/system/files/materials/15666/C.%20Preliminary%20Assessment%20and%20Identification%20of%20a%20noise%20problem.pdf) mentions an EU Tender document ENG/2020/OP/0036, https://etendering.ted.europa.eu/document/document-file-download.html?docFileId=88838, on the Study on Airport noise Reduction.

Section 2.22 of ANCA's publication references Box 1 of the EU Tender document.

Section 2.23 states the objective of the END is to **reduce the harmful effects of environmental noise exposure on human health.**

Section 2.24 states that "It can be inferred from these provisions that where the noise exposure level are harmful to human health, **Member States are required to identify that situation in the action plan as a "problem"** in the sense of Annex V No. 1, 6th indent to the END."

Importantly, section 2.27 states "Box 1 of the tender specification suggests that the Balanced Approach may be triggered when measures other than operating restrictions are introduced and potentially when the noise action plan is being revised or reviewed". This is very relevant to the Dublin Airport Noise Action Plans as they showed clear signs of escalating noise. Therefore, these should have triggered the Balanced Approach.

Box 1 further states that:

"The objective of an action plan is not confined to simply mapping problems (noise mapping is set out in Art.7 of END), but ultimately to trigger actions intended to address the problems identified. It follows that where Member States authorities have identified a problem in the action plan, they also have to provide for noise reduction measures. Article 8(1) second subparagraph gives Member States discretion in deciding which noise- reduction measures in particular they take to address a problem. However, this provision is not giving to Member States the discretion whether to take measures at all. Indeed, this would be against the systematic approach and procedures set out in the Directive in order to reach the objective to reduce noise".

Measures were not taken to address the noise problems identified in the Noise Action Plans.

Box 1

Commission Services' assessment of legislative obligations deriving from the combined reading of the END and the BAR

Context

The END requires Member States by 2008, and every five years thereafter, to draw up action plans to "manage noise issues, including noise reduction if necessary ", according to Article 8(1) and 8(5). Annex V point 1 states that an action plan must include [6th indent] an "identification of problems and situations that need to be improved" as well as [8th indent] "noise reduction measures [in force and] in preparation". In accordance with the 9th indent of Annex V point 1, the plan must also refer to "actions which the competent authorities intend to take in the next five years, including any measures to preserve quiet areas".

The BAR is intended to facilitate the achievement of specific noise abatement objectives at the level of individual airports and to enable as a last resort and when needed the use of operating restrictions in accordance with the balanced approach, i.e. the process developed by the International Civil Aviation Organization (ICAO) under which a range of measures available to reduce airport noise is considered and defined by Article 2(3) of the BAR. The main provisions of the BAR are included in its Article 5, on "General rules on aircraft noise management", and in Article 6, whose title is "Rules on noise assessment". Those provisions set out procedures potentially leading to the adoption of noise-related action.

BAR is closely linked to END. Not only do both acts (partially) have the same objective of protecting the environment but moreover, BAR also refers to END in several provisions, acknowledges the procedures set out therein and builds upon the measures taken in accordance with the Directive.

The objective of an action plan is not confined to simply mapping problems (noise mapping is set out in Art.7 of END), but ultimately to trigger actions intended to address the problems identified. It follows that where Member States authorities have identified a problem in the action plan, they also have to provide for noise reduction measures. Article 8(1) second subparagraph gives Member States discretion in deciding which noise-reduction measures in particular they take to address a problem. However, this provision is not giving to Member States the discretion whether to take measures at all. Indeed, this would be against the systematic approach and procedures set out in the Directive in order to reach the objective to reduce noise.

When the BAR is to be applied?

The BAR applies whenever a "noise problem" has been identified. Specific rules apply whenever there is a new operating restriction envisaged, aiming at noise reduction.

(1)The identification of a noise problem is a prerequisite for the application of the BAR, Article 1(1) and Article 5(2). Given the strong reference of the BAR to the END, it follows that the reference, in Article 1(1) and 5(2) of the Regulation, to a situation in which "a noise problem has been identified" must be understood as meaning that such problem emerges from the action plan, in accordance with Annex V point 1, 6th indent to the Directive ("identification of problems and situations that need to be improved").

The Directive does not state expressly how the Member States shall identify a problem. However, the objective of the Directive is to reduce on a prioritised basis harmful effects (defined in Article 3(b) as negative effects on human health) of exposure to environmental noise, Article 1(1). To that end, Member States adopt action plans, "with a view to preventing and reducing noise levels where necessary, and particularly where exposure levels can induce harmful effects on human health", Article 1(1)(c).

It can be inferred from these provisions that where the noise exposure level are harmful to human health, Member States are required to identify that situation in the action plan as a "problem" in the sense of Annex V point 1, 6th indent to the END.

Moreover, it is useful to compare the terms of Article 5 and Article 6 of BAR. Only Article 6(2) requires the existence of an indication "that new operating restriction measures may be required", whereas Article 5(2) applies as soon as "a noise problem has been identified". In addition, the introductory phrase of Article 5(3) refers to a situation in which "noise-related action is taken" and confirms by its terms that such action may encompass measures other than operating restrictions.

Consequently, Article 5(2) of the Regulation does not require that operating restrictions be envisaged.

Time wise, the BAR is triggered when the noise action plan is revised or reviewed according to the END.

(2) A specific case under the BAR arises where it turns out that a new noise related operating restriction may be required, namely as a result of the assessment conducted under the END. In such case, Article 6(2) of that Regulation applies.

Additional information

- *One or two action plans?*

Regardless the existence of two legal acts, the action plan is a single instrument which, as such, is governed by the END.

- *One or two public consultations?*

The END foresees under Article 8(7) to consult the public about proposals for action plans. The same is requested under the BAR, Article 5(2)(e). Given the close link between the two acts, and the fact that the action plan is a single instrument, it can be considered that Article 5(2)(e) of the BAR does not require to repeat a public consultation for any given problem.

- *Review every how long?*

At least every 5 years or whenever a major development affecting the existing noise situation.

If there is an existing operating restriction, shall competent authorities (re-)evaluate that

NOISE ZONES

It is worth noting that the members of Fingal County Council approved new noise zones for planning purposes on December 9th 2019, via Variation No.1 of the Fingal Development Plan 2017-2023 (https://www.fingal.ie/sites/default/files/2020-01/adopted-fdp-variation-1.pdf). Variation No.1 took on board the growing scientific evidence that night-time noise is detrimental to health and included Lnight metrics in the definition of the zones.

Table 7.2 Aircraft Noise Zones

Zone	Indication of Potential Noise Exposure during Airport Operations	Objective
D	≥ 50 and < 54 dB $L_{Aeq, 16hr}$ and ≥ 40 and < 48 dB L_{night}	**To identify noise sensitive developments which could potentially be affected by aircraft noise and to identify any larger residential developments in the vicinity of the flight paths serving the Airport in order to promote appropriate land use and to identify encroachment.** *All noise sensitive development within this zone is likely to be acceptable from a noise perspective. An associated application would not normally be refused on noise grounds, however where the development is residential-led and comprises non-residential noise sensitive uses, or comprises 50 residential units or more, it may be necessary for the applicant to demonstrate that a good acoustic design has been followed.* *Applicants are **advised** to seek expert advice.*
C	≥ 54 and < 63 dB $L_{Aeq, 16hr}$ and ≥ 48 and < 55	**To manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure, where appropriate, noise insulation is incorporated within the development** *Noise sensitive development in this zone is less suitable from a noise perspective than in Zone D. A noise assessment **must** be undertaken in order to demonstrate good acoustic design has been followed.*

	dB L_{night}	*The noise assessment must demonstrate that relevant internal noise guidelines will be met. This **may** require noise insulation measures.* *An external amenity area noise assessment **must** be undertaken where external amenity space is intrinsic to the development's design. This assessment should make specific consideration of the acoustic environment within those spaces as required so that they can be enjoyed as intended. Ideally, noise levels in external amenity spaces should be designed to achieve the lowest practicable noise levels.* *Applicants are **strongly advised** to seek expert advice.*
B	≥ 54 and < 63 dB $L_{Aeq, 16hr}$ and ≥ 55 dB L_{night}	**To manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure noise insulation is incorporated within the development.** *Noise sensitive development in this zone is less suitable from a noise perspective than in Zone C. A noise assessment **must** be undertaken in order to demonstrate good acoustic design has been followed.* *Appropriate well-designed noise insulation measures **must** be incorporated into the development in order to meet relevant internal noise guidelines.* *An external amenity area noise assessment **must** be undertaken where external amenity space is intrinsic to the developments design. This assessment should make specific consideration of the acoustic environment within those spaces as required so that they can be enjoyed as intended. Ideally, noise levels in external amenity spaces should be designed to achieve the lowest practicable noise levels.* *Applicants **must** seek expert advice.*
A	≥ 63 dB $L_{Aeq, 16hr}$ and/or ≥ 55 dB L_{night}	**To resist new provision for residential development and other noise sensitive uses.** *All noise sensitive developments within this zone may potentially be exposed to high levels of aircraft noise, which may be harmful to health or otherwise unacceptable. The provision of new noise sensitive developments will be resisted.*
Notes: • 'Good Acoustic Design' means following the principles of assessment and design as described in ProPG: Planning & Noise – New Residential Development, May 2017; • Internal and External Amenity and the design of noise insulation measures should follow the guidance provided in British Standard BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'		

Objective DA07 was included in Variation No.1. It states:

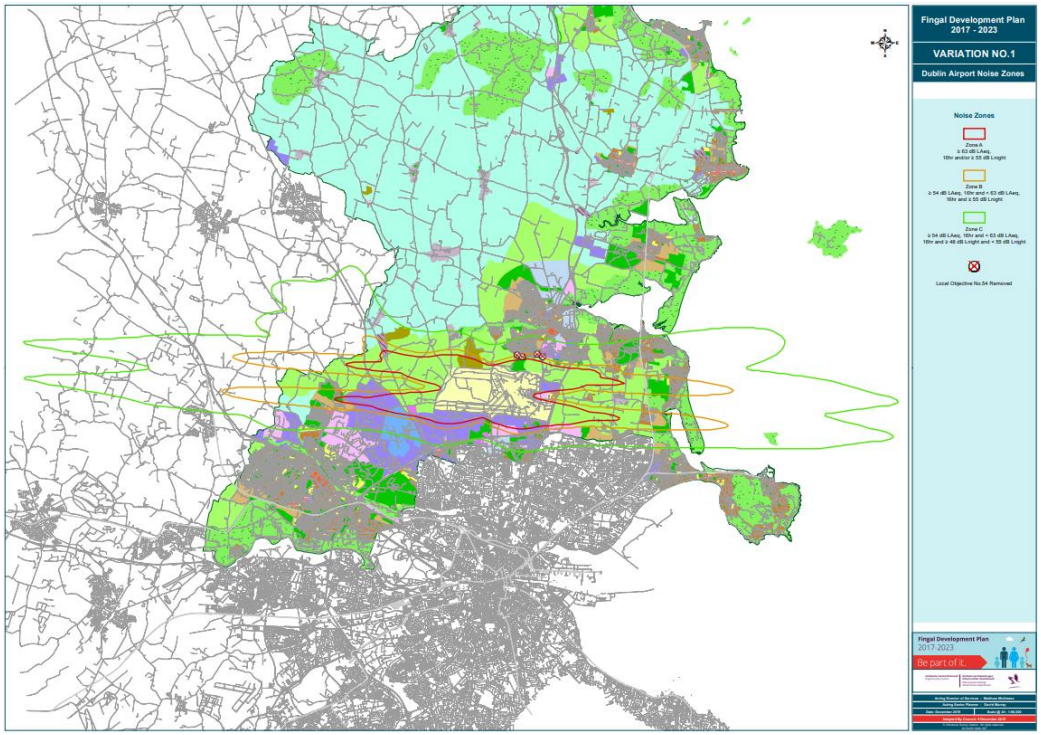
"*Objective DA07: Strictly control inappropriate development and require noise insulation where appropriate in accordance with table 7.2 above within Noise Zone B and Noise Zone C and where necessary in Assessment Zone D, and actively resist new provision for residential development and other noise sensitive uses within Noise Zone A, as shown on the Development Plan maps, while recognising the housing needs of established families farming in the zone.* ***To accept that time based operational restrictions on usage of a second***

runway are not unreasonable to minimize the adverse impact of noise on existing housing within the inner and outer noise zone."

Objective DA07 facilitates the use of operating restrictions to mimise the adverse effects of noise

The new noise zones were adopted in December 2019 to take account of night-time noise from a planning perspective. Immediate mitigations plans should have been introduced to limit the health impacts to the populations exposed to such night-time noise levels but were not.

Variation number 1 of Fingal Development Plan 2017-2023 (https://www.fingal.ie/sites/default/files/2020-01/map-adopted_variation_no_1.pdf)



Zone B accounts for areas exposed to noise levels >55dB Lnight but ANCA are not intending to insulate all dwellings within Zone B. There is a very clear contradiction in what the planning authority perceives as areas requiring insulation compared to ANCA. It is worth highlighting that the noise zones were developed assuming worse case 100% usage in each direction to account for days when the airport is operating under certain conditions. ANCA are not taking these conditions into account and are averaging out the noise levels.

CROSSWIND RUNWAY

Another reason to exclude 2018 as the Baseline year was its overuse of the crosswind runways which will be severely restricted when the North Runway becomes operational.

In the original EIAR from December 2020, tables 13B-8 and 13B-9 show the annual runway usage for 2018 and 2019. A major refurbishment of runways 10/28 started in November 2016 and continued until September 2018 (https://www.dublinairport.com/corporate/corporate-social-responsibility/noise/runway-maintenance). As a result, runways 16 and 34 were used as a replacement.

Runway Usage

Current Situation

13B.3.11 The runway usage for 2018 has been obtained from the individual aircraft movement data for the relevant year. A summary of the overall runway split for the 2018 annual period is given in Table 13B-8.

Table 13B-8: 2018 Annual Runway Usage

Runway	Arrivals	Departures
10	23.3%	24.1%
28	72.2%	71.4%
16	3.8%	2.4%
34	0.6%	2.1%

13B.3.12 The runway usage for 2019 has been obtained from the individual aircraft movement data for the relevant year. A summary of the overall runway split for the 2019 annual period is given in Table 13B-9.

Table 13B-9: 2019 Annual Runway Usage

Runway	Arrivals	Departures
10	21.1%	20.8%
28	77.9%	76.7%
16	0.8%	0.3%
34	0.2%	2.2%

Comparing arrivals in 2018 to 2019, 4.4% of all arrivals used runways 16/34 compared to 1.0%.

Comparing departures in 2018 to 2019, 4.5% of all departures used runways 16/34 compared to 2.5%.

Data comparing runways 16/34 usage with other years was provided in the ANCA RFI No.80 request (https://northrunway.exhibition.app/assets/pdf/documents/5_Response_to_ANCAs_Direction_01.pdf). The total runway usage by category is listed in Table 3:

Table 3: Runway 16-34 Movements by Year and Category

Year	Runway 16-34 Movements by Category					
	Operational Efficiency	Recorded Crosswind	Possible Crosswind Related	Maintenance	Other	Total
2010	1,158	588	1,340	2,055	336	5,477
2011	1,783	1,494	3,279	2,668	322	9,546
2012	2,349	1,467	1,710	2,145	624	8,295
2013	2,057	1,989	2,793	2,215	419	9,473
2014	2,102	2,408	2,710	1,616	134	8,970
2015	1,484	3,131	2,990	1,779	605	9,989
2016	1,421	1,744	2,069	2,207	556	7,997
2017	2,260	1,447	1,512	8,230	625	14,074
2018	2,291	2,718	2,040	3,048	216	10,313
2019	2,445	1,003	252	926	58	4,684
Total	**19,350**	**17,989**	**20,695**	**26,889**	**3,895**	**88,818**
Percent[1/]	1.0%	0.9%	1.1%	1.4%	0.2%	4.6%

1/ Percent of total aircraft movements over the 10-year period on both runways.

In 2018, there were a total of 10313 movements on 16/34 compared with just 4684 movements in 2019.

In the revised EIAR, Table 13B-9 outlines the future use of runways 16/34. Just 0.75% of aircraft movements are forecast to use Runway 16 and 0.255 to use Runway 34.

North Runway Airport Layout

13B.3.12 Once the North Runway is operational the Crosswind Runway (16/34) will continue to be used, however only for essential use (e.g. when there are strong crosswinds) as stated in Condition 4 of the North Runway Permission. The past use of the crosswind runway has been reviewed and is reported in *Crosswind Runway Information, Requested by ANCA RFI Appendix A, Request H and Table 4 Items 79, 80 and 81, Ricondo, May* 2021. Allowing for this, for the purposes of noise modelling the future usage of the Crosswind Runway is assumed to be 1% of aircraft movements, with the remaining 99% of movements on the two main runways. 0.75% of aircraft movements are forecast to use Runway 16 with the remaining 0.25% on Runway 34. The modelled future runway usage over a given year is summarised in Table 13B-9 below, based on the average runway usage over the last 10 years and allowing for the expected reduction in Crosswind Runway usage.

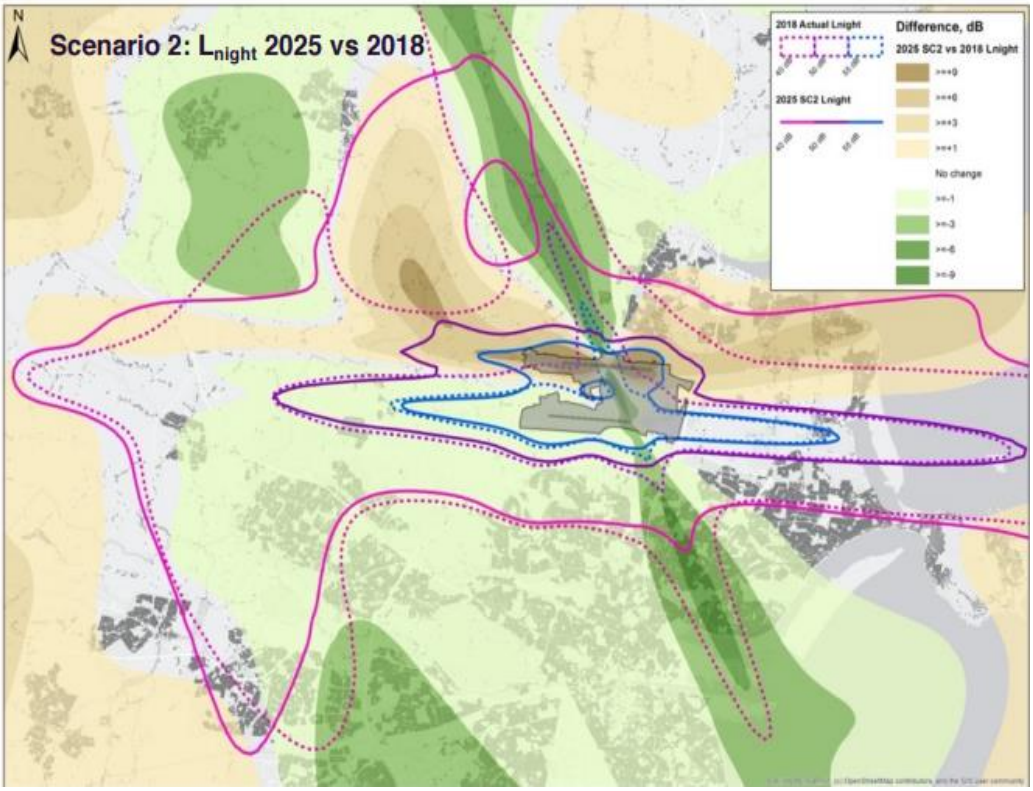
Table 13B-9: Future Runway Usage

Runway	Arrivals	Departures
10L/10R	29%	29%
28L/28R	70%	70%
16	0.75%	0.75%
34	0.25%	0.25%

The daa's future scenario's modelling has been performed with these future runway usage statistics. Movements on runways 16/34 are severely curtailed as the flight paths extend over Dublin city affecting a densely populated area.

2018 has been selected by the daa as their Baseline year in which to compare the future scenarios against. 2018 had a high usage of the Crosswind runways compared with 2019 as shown above. When comparing a future year to 2018, the difference in the number of people affected by the crosswind runways in the future will be significantly lower due to the limited use of the crosswind runways in the future once the North runway is operational. Therefore, comparing against 2018 is not a good comparison. The number of people affected by the crosswind runway overuse should be subtracted from the 2018 and 2019 figures and then compared to future scenarios. The Relevant Action planning application should not be seen to artificially benefit from the overuse of runways 16/34 in 2018 compared to future years. The restrictive use of runways 16/34 is not as a result of the Relevant Action. It's as a result of the North Runway planning conditions.

As part of the additional information, the daa added a new report from Anderson Acoustics titled 'Dublin Airport Development of Proposed noise Measures' (https://northrunway.exhibition.app/assets/pdf/documents/14_Development_of_Proposed_Noise_Measures.pdf). This document is intended to provide an overview of the approach taken by the daa. On a slide title 'Runway Operating Scenario 2' a map is shown detailing the Lnight noise scenario between 2018 and 2025 Proposed. This map shows the areas that will benefit (green shading) in 2025 compared to 2018 and the areas that will suffer (brown shading) higher noise levels. Because of the future limited use of runways 16/34, the populations under their flight paths will benefit. As the flight path for runway 34 extends over Dublin city, a large proportion of people will benefit from its future restrictive use. But this is not related to the Relevant Action and these reductions in the population figures affected by runways 16/34 should not be allowed to offset and minimize the overall numbers of people affected by the Relevant Action.



ORAL HEARING – MR RUPERT THORNELY-TAYLOR

Mr Rupert Thornley Taylor was a consultant for An Bord Pleanála (ABP) and provided a report dated June 4th, 2007 on his findings of the Oral Hearing submissions (Microsoft Word - R217429A.DOC (pleanala.ie)). Mr Taylor concluded that the people and property counts before the hearing were unreliable and revised figures were requested by ABP in Information Request #3. A response was received on January 9th, 2007, and the data provided in Table 1:

Dublin Airport Authority Northern Parallel Runway — An Bord Pleanala Ref. No. PL 06F.217429

TABLE 1

Non-Dispersed Option 7b (737-800) 2025 Contour High Growth			Dispersed Option 7b (737-800) 2025 Contour High Growth		
	2007	2025		2007	2025
69 dB contour			**69 dB contour**		
Household	19	19*	Household	20	20*
Persons	57	57	Persons	60	60
66 dB contour			**66 dB contour**		
Household	39	70	Household	38	68
Persons	117	161	Persons	114	156
63 dB contour			**63 dB contour**		
Household	61	110	Household	54	97
Persons	183	253	Persons	162	223
60 dB contour			**60 dB contour**		
Household	840	1,512	Household	852	1,534
Persons	2,520	3,478	Persons	2,556	3,528
57 dB contour			**57 dB contour**		
Household	882	1,588	Household	837	1,506
Persons	2,646	3,652	Persons	2,511	3,464
54 dB contour			**54 dB contour**		
Household	1,767	3,180	Household	1,806	3,251
Persons	5,301	7,314	Persons	5,418	7,477
51 dB contour			**51 dB contour**		
Household	4,347	7,824	Household	5,543	9,977
Persons	13,041	17,995	Persons	16,629	22,947
48 dB contour			**48 dB contour**		
Household	11,038	19,868	Household	15,213	27,383
Persons	33,114	45,696	Persons	45,639	62,981

Mr. Taylor stated that the revised data shows an increase in the number of households within the **63 dB contour** from 112 to 185 between 2007 and Option 7b 2025 High Growth and the number of people rising from **336 to 439**.

Mr. Taylor stated that the EIS from Dec 2004 states that the 63 dB LAeq16 contour represents 'moderate annoyance' and that the onset of disturbance 'Low annoyance' is represented by the **57 dB LAeq16 contour**. Figures from Table 1 of the additional information shows that the

number of households increases from 1801 to 3225 from 2007 to Option 7b 2025 High Growth and the number of people increases from **5403 to 7431**.

Contour	Dwellings	Population	Dwellings	Population
LAeq16	2007		Option 7b (737-800) 2025 High Growth	
>48	24363	73089	43836	100836
>51	9150	27450	16453	37855
>54	3607	10821	6476	14908
>57	**1801**	**5403**	**3225**	**7431**
>60	964	2892	1719	3967
>63	**112**	**336**	**185**	**439**
>66	58	174	88	216
>69	20	60	20	60

He further states that the "*proposed development will result in an extension of the significant effects of noise as indicated by the population counts given…This conclusion is predicated on confinement of the use to Option 7b and a ban on the use of the proposed new runway between the hours of 2300 and 0700. This will be partially offset by the noise mitigation scheme as a result of the extension to the noise insulation programme, the buy-out scheme and the scheme for noise insulation of schools, but outside the limits of these schemes there will be an increase in noise exposure for the people affected.".*

So, Mr Taylor found that an increase from **5403->7431** > 57dB LAeq16 and an increase from **336->439** >63dB LAeq16 unacceptable.

In 2018 and 2019, the >63dB LAeq16 figures improved slightly. The > 57dB LAeq16 figures increased from 5403 to 9177 and 9706. Growth between 2007 and 2018/2019 was allowed to grow unmitigated beyond values deemed unacceptable by Mr. Taylor at the Oral Hearing.

These large increases in the population exposed to >57dB LAeq16 in 2018/2019 demonstrate that 2018/2019 cannot be deemed appropriate Baseline years as increases in magnitude of these values compared with 2007 were unacceptable at the Oral Hearing in 2007.

Contour	2007	2016 (27.9m)	2018 (30.8m)	2019 (32.9m)	Option 7b (737-800) 2025 High Growth(43m)
LAeq16					
>48	73089				100836
>51	27450		49108	53278	37855
>54	10821		23683	24622	14908
>57	**5403**	5320	**9177**	**9706**	**7431**
>60	2892		1998	2158	3967
>63	**336**	303	257	266	**439**
>66	174		138	146	216
>69	60	29	28	28	60

In a pre-planning document from ANCA dated 30th April 2020 ("The Identification of a Potential 'Noise Problem' and the setting of a candidate Noise Abatement Objective for Dublin Airport"), ANCA present data showing that the 2018 data exceeds an estimate of the 2005 EIS forecast as associated with the planning conditions for the North Runway consent. 2019 data is noisier again and this provides further proof on the illegibility of 2018 and 2019 as baseline reference years.

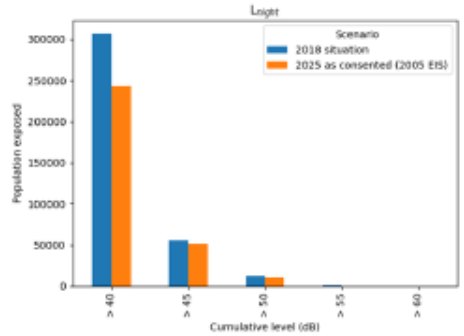
DRAFT

Noise Problem Aspects

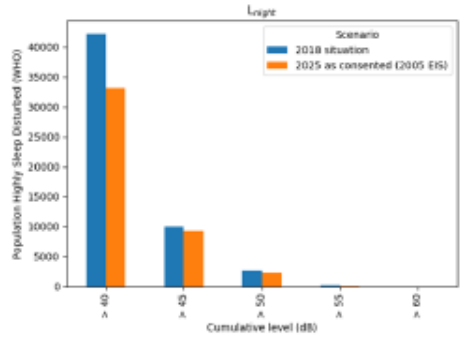
Aspect B – Current L_{night} exposure in excess of consented L_{night} exposure

- daa has provided an estimate of the 2005 EIS forecast L_{night} noise exposure in 2025 as associated with the operating conditions for the North Runway consent.
- This is has some importance and materiality as it is the level of noise exposure that is attached with the current North Runway consent.
- This could be seen to achieve an unwritten noise abatement objective set by the Board to determine the restrictions in the consent
- ANCA analysis indicates that 2018 noise exposure was higher than the North Runway consented exposure. ANCA will explore this in relation to 2017 and 2019 data when this is available.

(a) Population Exposed - L_{night}



(b) Population HSD - L_{night}

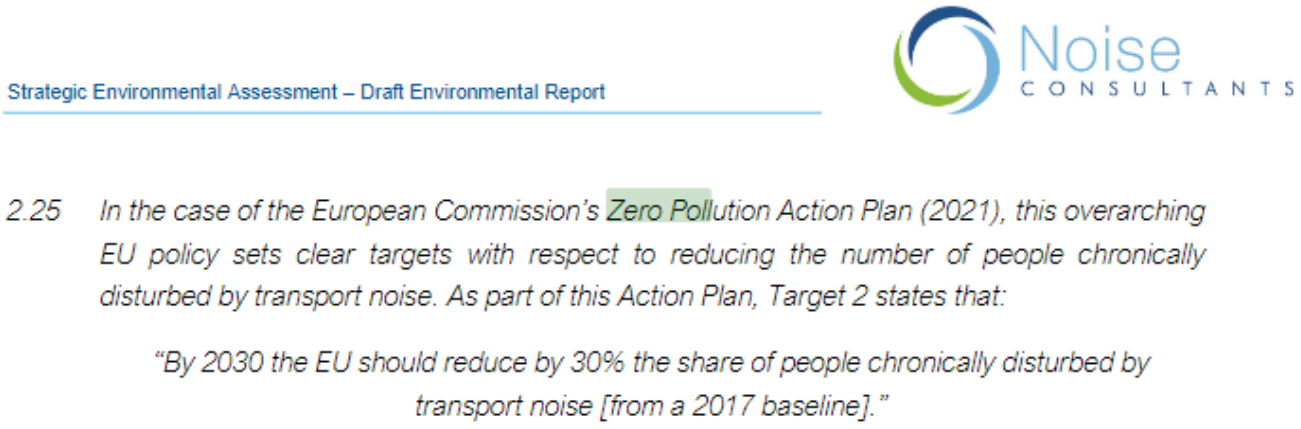


EU COMMISSION ACTION PLAN

In ANCA's SEA draft environmental report it references the EU Commission Action Plan document: 'Towards a Zero Pollution for Air, Water and Soil':

https://ec.europa.eu/environment/strategy/zero-pollution-action-plan_en

The target is to reduce the number of people chronically disturbed by transport noise by 30% from a 2017 baseline.



Strategic Environmental Assessment – Draft Environmental Report

Noise CONSULTANTS

2.25 *In the case of the European Commission's Zero Pollution Action Plan (2021), this overarching EU policy sets clear targets with respect to reducing the number of people chronically disturbed by transport noise. As part of this Action Plan, Target 2 states that:*

"By 2030 the EU should reduce by 30% the share of people chronically disturbed by transport noise [from a 2017 baseline]."

Target 2: By 2030 the EU should reduce by 30% the share of people chronically disturbed by transport noise

Basis: Environmental Noise Directive 2002/49/EC

Description: The target is based on a 2021 Commission study analysing the official Member State data on noise exposure (Article 7 of the Environmental Noise Directive), national noise action plans covering the 2018-2024 period (Article 8 of the Environmental Noise Directive) and the 2020 EEA outlook on environmental noise in Europe[5]. The study quantified the reduction in noise-related health issues which can derive from implementing cost-effective measures, including solutions already available on the market. Some of those stem from specific noise limits mandatory under EU law (e.g.: on tyres[6], on road vehicles[7], on quiet wagons[8]), whilst others (e.g.: on quieter road surfaces, on smooth and quieter rails, on flight timeframes and procedures) require measures to be taken at national/local level under the Environmental Noise Directive in interplay with other relevant EU law[9]: the overall coordination and ambition level of the latter are left to the discretion of the relevant national/local authorities. Overall, the assessment of different scenarios integrating measures on roads, railways and airports showed that, compared to 2017, the expected reduction in noise-related health issues by 2030 ranged from 15% to 45%, with the most modest reduction stemming from the implementation of a few measures linked to the specific noise limits mandatory under EU law, and the highest reduction from a combination of the first scenario together with stronger measures at local level. Thus, a reduction of 30% by 2030 is proposed as a realistic ambition, mainly achievable through a better implementation of relevant EU law and sound support to urban and regional zero-pollution actions on noise.

Reference year: 2017

Evidence base: EU study (2021) 'Assessment of potential health benefits of noise abatement measures in the EU'[10]

Monitoring: Update of the regular EEA assessment (latest EEA Report No 22/2019[11]) to be included in the Zero Pollution Monitoring and Outlook Framework[12]

Target 2 in the Action Plan is to reduce the number of people chronically disturbed by Transport Noise by 30% by 2030. But the reference year to compare against is **2017**. The EU are basing this from the outcomes of the PHENOMENA project.

ANCA have the same target in their NAO of 30% by 2030 but their reference year is 2019. The SEA outlines how those > 50dB Lnight have more than doubled since 2016 (6600 -> 13838). And 2025 Proposed will have 9764 people >50dB Lnight.

> 4.80 *However, based on information submitted as part of planning application F20A/0668, the advice report on the potential noise problem associated with the application (Noise Consultants Ltd, 2021) shows further increases in noise exposure beyond those in the NAP. For example, the number of people exposed to night-time noise levels above 50 dBA L_{night} had risen to 12,317 in 2018, and to 13,838 in 2019 – more than double the figure for 2016. Similarly, the number of people exposed to average daytime noise levels greater than 55 dBA L_{den} reached 35,483 in 2018 (falling slightly to 34,097 in 2019) – again double the 2016 figure.*

This is further evidence that ANCA chose to take the 30% reduction from the EU Commission's Action Plan but chose deliberately to ignore their choice of 2017 and used 2019 instead as it was the noisiest year on record.

The baseline of 2019 chosen by ANCA is therefore contrary to Ireland's obligations under the adopted EU Action Plan on environmental noise and ignores all the data previously presented indicating the escalating noise figures which in turn inflict further health issues onto the community of St Margarets The Ward.

It is also worth noting that the daa had originally intended to apply to ABP in 2016 to have the operating restrictions removed. Had they proceeded at that time then 2016 would have been the noisiest year. So, it suited the daa's case that the Aircraft Noise Bill was delayed until 2019 when ANCA was enacted. This delay should not be used by ANCA as an opportunity to grant 2019 as the Baseline reference year.

PHENOMENA PROJECT

(Assessment of Potential Health Benefits of Noise Abatement Measures in the EU)

The aims of the Phenomena project are summarised in https://nws.eurocities.eu/MediaShell/media/Phenomena_project_summary.pdf.

The Phenomena project aims to support the European Commission in defining the potential of measures capable of delivering significant reductions (20%- 50%) of the health burden due to environmental noise from major roads, railways and airports, and to assess how legislation could be enhanced to strengthen the implementation of mitigation measures, whilst considering the constraints and specificities of each transport mode.

This will be undertaken by evaluating the current situation and potential improvements, considering realistic abatement measures and legislative options in a series of scenarios.

The project encompasses:

- assessment of international and national noise legislation and relevant literature;
- assessment of noise action plans and their implementation
- identification and quantification of appropriate noise abatement solutions
- global modelling of characteristic traffic noise situations, scaling up from a series of site noise maps to EU level
- cost-benefit analysis (CBA) of each noise abatement measure
- a broad stakeholder consultation and two stakeholder workshops;
- baseline definition and scenario development;
- cost-benefit analysis (CBA) per measure and per scenario;
- comparative assessment of selected scenarios.

A final report will provide recommendations for enhanced legislation to achieve the targets for reduction of health burden.

Infrastructure in the scope is focused on

- roads and railways inside agglomerations of more than 100.000 inhabitants.

- locations around major roads of more than 3 million vehicles a year, where noise levels are above 53 dB Lden;
- around major railway lines of more than 30.000 trains a year, where noise levels are above 54 dB Lden; and
- around major airports of more than 50.000 movements a year, where noise levels are above 45 dB Lden.

Existing noise mitigation measures will be considered, such as:

for roads: quieter tyres, vehicles and road surfaces, barriers and local planning.

for railways: infrastructure improvement, barriers and local planning;

for aircraft: improved landing and take-off profiles, flight dispersion, operating restrictions, phasing out of older aircraft and local planning.

Legislation options to be considered may include for example: mandatory action plans, noise limits at dwellings, vehicle noise limits, link between END and vehicle legislation.

The project set up a specific methodology to quantify the health burden and its reduction at EU level over time. The DPSEEA framework was applied, quantifying each step in the chain from source to receiver and health impact. **The health burden is quantified by two monetisation methods to account for potential spread, but also in terms of percentage reduction of highly annoyed, highly sleep disturbed people and DALYs (related to heart disease)**. The existing average noise distribution in the EU, from EEA data, is used for the baseline, including forecast traffic growth and foreseen noise legislation.

The health burden reduction is calculated from the change in this noise distribution resulting from changes to the baseline, for example due to further reduction of noise at source, in the path or at receiver.

The cost-benefit analysis is based on the costs for increased implementation of noise abatement measures and the monetised health benefits using the two methods. It results in a benefit-to cost ratio over the period 2020-2035, net present value and a break-even year.

For airports, the report considered the following noise abatement solutions:

Table 7.13 Scenarios with a single noise solution for aircraft noise

Scenario	Description
A – flight profiles	Introduction of improved flight profiles. 2 dB reduction for departures.
B – track dispersion	Introduction of P-RNAV, resulting in no horizontal dispersion
C - Operating restrictions - curfew	night curfew, simulated by shifting 25% of the night flights to the evening, 25% to the day and by cancelling the remaining 50%. The effect of an implementation in i) 2025 and ii)2030 will be assessed.
D - Operating restrictions - prohibition of operation for noisier aircraft	Prohibition of noisy aircraft during night period. simulated by replacing all non-chapter 4 aircraft by a chapter 4 equivalent in the period from 22h to 08h. The effect of an implementation in i) 2025 and ii)2030 will be assessed.
E - Forced phase out of older aircraft	In this scenario all non-chapter 4 compliant aircraft will be replaced by chapter 4 compliant equivalents. The effect of an implementation in i) 2025 and ii)2030 will be assessed.
F - Acquisition of new quieter aircraft	Accelerated fleet renewal. Apply an additional 0.1 dB/year noise reduction until 2030. After that, natural renewal is assumed
G - Sound insulation of residential and communal buildings	It is assumed that the percentage of dwellings with façade/roof insulation is increased by 50% in 2035. As an approximation it is further assumed that the noise exposure for insulated dwellings is so much reduced that these dwellings can be eliminated from the exposure distributions.
H – Creation of a buffer zone	It is assumed that in 2035 no population is living in areas with Lden>70 and Lnight>65dB.
I - Stakeholder engagement	Reduction of sensitivity equivalent to 2dB is assumed to be achieved by 2035.
J - reception limits	A scenario with reception limits L_{den} = 60 dB and L_{night} = 55 dB will be considered.

The report shows that the “best single solution with respect to health burden reduction is the introduction of a night curfew at all airports”.

The health burden reduction in 2030 is estimated between 37-60% and the benefit to cost ratio over 2020-2030 is 0.1-0.2.

Table 8.20 Overview of the impact of night curfew

Definition	Night curfew
Solutions triggered	Operating restriction, banning night flights at EU airports
Legislation concerned, new/amended	BAR
Causal links to national or EU legislation	National reception limits, noise emission ceilings, END action plans.
Technical and administrative steps required	Careful Impact assessment (CBA)
Negative trade-offs	Potentially high economic and social impact due to loss of jobs and profit
Expected health burden reduction	37 to 60%
Estimated benefit to cost ratio	0.1 to 0.2
Stakeholder inputs	Communities around airports strongly in favour (as main beneficiaries).
Likelihood of implementation by competent authorities	Not very likely to be implemented for the full night period (8 hours). Some possibilities for a ban during shorter periods.
Obstacles	Airlines (especially air cargo) will strongly oppose the measure, due to the likely high economic impact.
Timeline	As the BAR is currently under review, adjusting specific aspects of the instrument related to night-time bans could be implemented within two to four years.

ANCA have stated that the phasing out of the noisiest aircraft would have a significant effect on noise levels. However, that statement is contradicted by the Phenomena report which states that the expected health burden reduction is just 2.6-3.7%.

Table 8.23 Overview of the impact of phasing out the noisiest aircraft

Definition	Phasing out noisiest aircraft
Solutions triggered	Quieter aircraft
Legislation concerned, new/amended	BAR
Causal links to national or EU legislation	National reception limits, noise emission ceilings, END action plans.
Technical and administrative steps required	Direct financial support for the phasing out of noisiest aircraft before the restart of post-pandemic economy; review of the BAR to accommodate forced phase out.
Negative trade-offs	Loss of flight slots and business especially for the air freight sector.
Expected health burden reduction	2.6-3.7%
Estimated benefit to cost ratio	2.7-5.2
Likelihood of implementation by competent authorities	Likely if it also delivers savings such as fuel.
Obstacles	N.A.
Timeline	Targeted financial support could be an immediate solution within a year.

In section 8.5.5 (F – Fleet replacement with quiet aircraft), the expected health burden reduction from fleet replacement is discussed. These estimates are based on a replacement of the whole fleet such that in the period 2030-2035 a fully Chapter 14 compliant fleet is achieved. This is the best-case scenario for fleet replacement and far and above the forecasts for fleet replacements by the main carriers at Dublin Airport.

The report proposes a variant worth considering would be a night curfew for non-Chapter 14 aircraft in 2025. Also, economic incentives for quieter aircraft such as preferential slots for latest generation aircraft.

Table 8.24 Overview of the impacts for fleet replacement

Definition	Replacement of the existing fleet with quieter aircraft
Solutions triggered	Quieter aircraft
Legislation concerned, new/amended	BAR, EU Slot Regulation
Causal links to national or EU legislation	National reception limits, noise emission ceilings, END action plans.
Technical and administrative steps required	Stakeholder consultation, BAR review
Negative trade-offs	Partial write-off of investment
Expected health burden reduction	22-23%
Estimated benefit to cost ratio	-0.1
Likelihood of implementation by competent authorities	Likely if it also delivers savings such as fuel
Obstacles	Stakeholder buy-in
Timeline	10-15 years

This best-case-scenario for complete fleet renewal delivers an expected health burden in the region 22-23%. These estimates show that ANCA's NAO cannot deliver the expected outcomes it hopes to achieve:

- The number of people highly sleep disturbed and highly annoyed in 2030 shall reduce by 30% compared to 2019
- The number of people highly sleep disturbed and highly annoyed in 2035 shall reduce by 40% compared to 2019
- The number of people highly sleep disturbed and highly annoyed in 2040 shall reduce by 50% compared to 2019
- The number of people exposed to aircraft noise above 55 dB L_{night} and 65 dB L_{den} shall be reduced compared to 2019

FLEET RENEWAL

The main contributor to ANCA's reduction is fleet renewal. There is no reduction in the number of flights on the South Runway at night and forecasts show that they will grow as the Night Quota System facilitates growth in movements. There is also future growth during the daytime with the new North Runway.

ANCA provided a report titled a 'Review of Applicant's Fleet and Forecast Assumptions and Curfew Commentary' in Appendix G of their draft decision. The projections of future aircraft mix were analysed by 'Altitude Aviation Advisory'. Altitude Aviation Advisory did not develop passenger forecast for Dublin Airport. They have used Mott MacDonalds forecasts. This is a serious flaw as no independent scrutiny has taken place of Mott MacDonalds forecast. ANCA, as independent Noise Regulator, is therefore taking the daa's passenger forecasts without any due diligence.

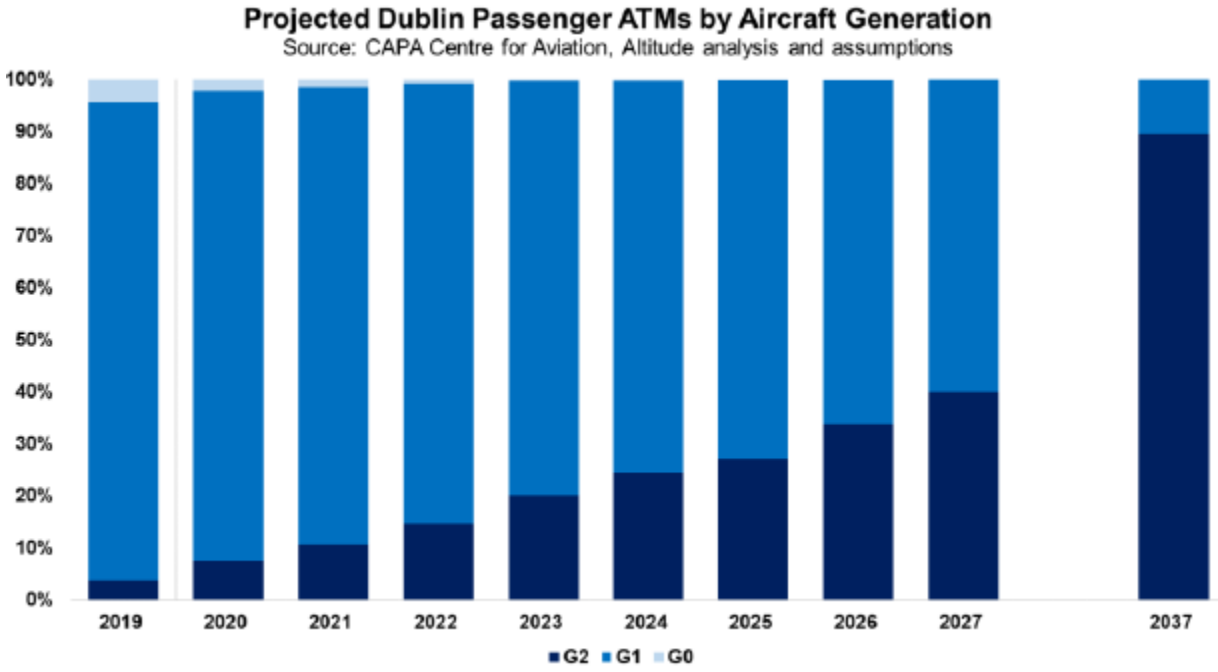
Forecast Parameters

- We have not developed passenger forecasts for Dublin Airport.
  - Instead, **we have used the Mott MacDonald central unconstrained ATM forecast**.
  - Additionally, **we have adopted the Mott Macdonald 2019 ATM shares by airline**, reported for Aer Lingus, Ryanair and British Airways.

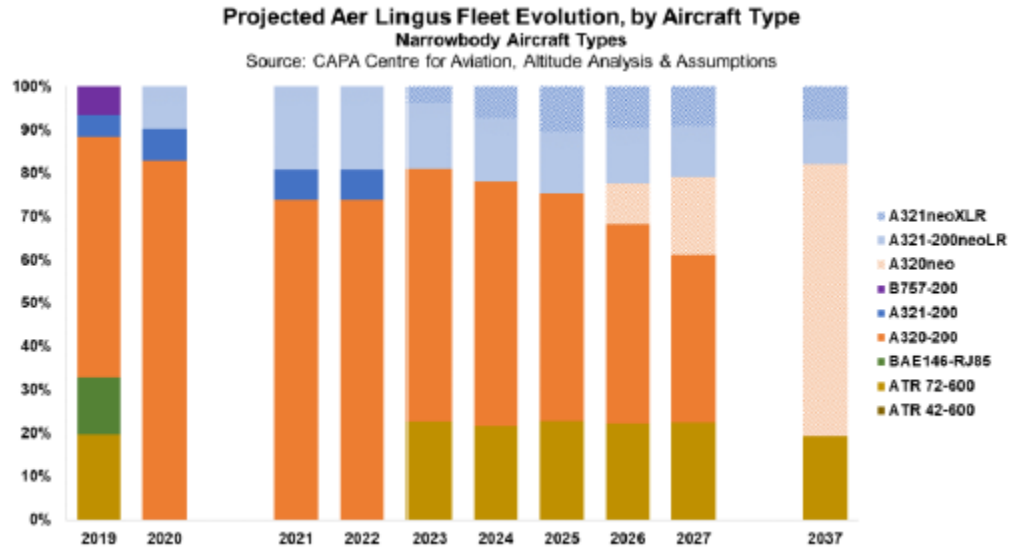
Also worryingly from Altitude Aviation Advisory:

- We have not had access to detailed data on actual flight operations at Dublin (only planned schedules) and have not been able to consult directly with the DAA or airlines on their plans.

The report provides a forecast of the various aircraft generation types. Circa 25% of aircraft in 2025 will be Generation 2, the year used for the regulatory decision. The projections are for 90% replacement by 2037 which is less than the whole fleet replacement modelled by the Phenomena project. Therefore, the estimated reduction in health burden of 22-23% will be reduced at Dublin Airport.



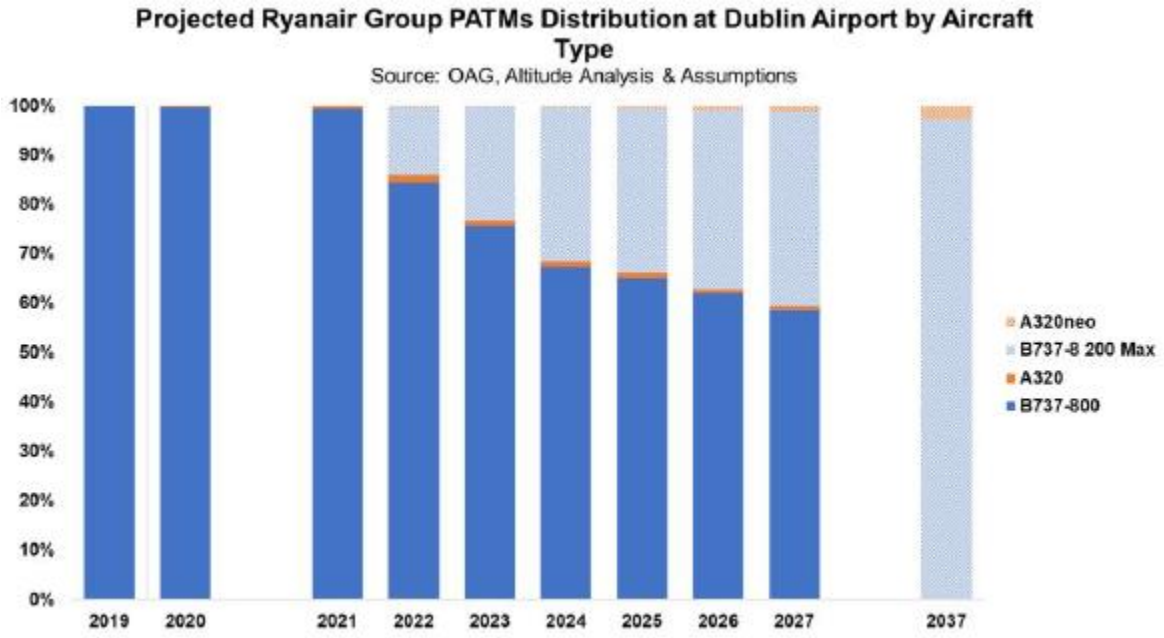
The report provides modelling of the projected fleet development for Aer Lingus. The majority of the fleet are narrow body aircraft. The projections show that the A320neo is not coming on stream until 2026, after the time period considered in the daa's application.



These forecasts are predicated on the following assumptions:

A320 / A320neo	▪ 2021: Average age of existing A320 is ca. 14yrs with min age of ca. 10yrs and max age of ca. 20yrs. ▪ 2021-27: We assume A320 aircraft are used to cover capacity on some of the routes previously operated by Stobart/CityJet. ▪ 2021-27: We assume a gradual phase out of the existing A320 aircraft beginning 2023. ▪ 2021-31: We assume an order will be made for A320neo aircraft (or allocated to Aer Lingus from existing group capacity), and that these will begin to replace the A320 (with gradual growth of the combined A320/A320neo fleet). ▪ 2028-37: We assume continued gradual growth of the A320neo fleet.

The modelling of Ryanair's fleet is as follows:



The projections show that the B737-8 200 Max has approximately a 35% share by 2025, the time period considered in the daa's application.

These forecasts are predicated on the following assumptions:

B737-8 200 MAX	▪ 2021: This aircraft is now certified for service once again. Ryanair has 173 outstanding orders for the type, with a schedule for deliveries over 2022-24 (source: CAPA). ▪ 2021-27: We assume the aircraft are delivered as per the schedule over this period. Further, we assume that Ryanair is able to secure delivery slots for further aircraft over 2025-27. ▪ 2028-37: We assume further aircraft of this type will be ordered, and that deliveries will continue over this period (gradually replacing B737-800 airframes). We assume deliveries come at a faster rate than retirements of other aircraft types, leading to net fleet growth consistent with short term projections by the company but at a lower rate than seen historically.

ANCA's reduction in noise levels outcomes presented in its NAO are not achievable based on the results from the Europe wide Phenomena project.

In the conclusion of the Phenomena report, it highlights that the study included the review of 300 Noise Action Plans (NAPs). The review indicated that a "*wide variety of measures are focused on noise mitigation both from the receiver as well as the noise source perspective. These often combine operating restrictions, such as a curfews with a penalty regime, noise monitoring and infrastructure development including lengthening the runway to avoid low flights over residential areas*".

It is worth noting that the NAP for Dublin Airport never attempted to provide any meaningful reduction in noise levels, as curfews or penalty regimes were never considered.

The study concludes for Aircraft noise that the best single solution with respect to health burden reduction is the introduction of a night curfew at all airports.

Aircraft

The best single solution with respect to health burden reduction is the introduction of a night curfew at all airports, i.e. an EU-wide ban on night flights. Although this has a large reduction in health burden, it has also a very high cost.

Health burden reduction in 2030: 37-60%

Benefit to cost ratio over 2020-2035: 0.1-0.2

The Dublin Airport Noise Action Plan (https://www.fingal.ie/sites/default/files/2019-04/NAP%20Final.pdf) references the change in aircraft types from 2003 to 2017. In 2003 46% of aircraft were Chapter 4 and 14, 83% in 2008 and 90% in 2017. Yet noise exposure levels grew exponentially in line with movement increases.

In 2017 over 90% of aircraft using Dublin Airport were the quietest types (Chapter 4 and 14) compared to 83% in 2008 and 46% in 2003[5].

So, if fleet replacement didn't work in the past, why do ANCA solely rely on fleet replacement to Chapter 14 levels to reduce noise if movement levels are to increase? This is clear evidence that fleet replacement does not counter the effects of ever-growing movements which is facilitated by ANCA's Night Quota System. ANCA must interrogate the historical data and explain why with the adoption of quieter aircraft, noise levels grew exponentially due to the increase noise contour footprint.

In 2016 the 45dB Lden contour was 370km^2. In 2019 it grew to 745km^2. This is a doubling of the size of the 45dB Lden contour in just 3 years.

In 2016 the 40dB Lnight contour was 212km^2. In 2019 it grew to 328km^2. This is a 50% increase in the size of the 40dB Lnight contour in just 3 years.

Here's a comparison of the Lden and Lnight contours areas from 2006 to 2019:

dB Lden	2006	2016	2018 Baseline	2019 Baseline
>=45		370	703.2	745.7
>=50		148	209.3	218.7
>=55	57.6	67	85.9	88.3
>=60	22.1	27.3	33.5	35.6
>=65	9.1	10.4	11.6	12.2
>=70	3.7	3.9	4.1	4.4
>=75	1.6	1.6	1.7	1.7

dB Lnight	2006	2016	2018 Baseline	2019 Baseline
>=40		212	304.4	328.4

>=45		90	118.2	122.2
>=50	28.3	38.8	48.4	52.3
>=55	11.3	14.7	16.8	18.6
>=60	4.7	5.6	5.8	6.4
>=65	1.9	2.3	2.3	2.5
>=70	0.9	1	1	1

ANCA needs to explain this growth in contour areas even though the percentage of quieter aircraft grew to over 90% in that timeframe. And why this will not be the case in future years. The modelling by the daa for the quieter aircraft cannot the trusted. The recorded noise levels from the Chapter 14 aircraft are in line with those of Chapter 4 on the ground at the noise monitors surrounding Dublin Airport.

NOISE MONITOR DATA

On January 14th, 2022, the daa provided noise data, 'NMT 1 2 3 2016 2018 2019 Lmax events.xlsx' in Appendix E, to the Community Liaison Group (CLG), setup as part of the planning conditions for the Northern Runway, following a request for noise results for monitors #1, #2 and #3 for 2016, 2018 and 2019.

In 2019 there were 6959 arrivals of aircraft type B738 recorded at noise monitor #1. The average LAmax for these arrivals was 79.61dB. The equivalent average for B38M aircraft was 78.82dB LAmax, just 0.79dB in difference.

The average of all arrivals at noise monitor #1 in 2019 was 78.94dB LAmax which is just 0.12dB LAmax above the B38M average.

In 2019 there were 30553 departures of aircraft type B738 recorded at noise monitor #1. The average LAmax for these departures was 76.55dB. The equivalent average for B38M aircraft was 75.00dB LAmax, just 1.55dB in difference.

The average of all departures at noise monitor #1 in 2019 was 75.9dB LAmax which is just 0.9dB LAmax above the B38M average.

These statistics prove that the new Ryanair aircraft type B38M creates equivalent noise disturbance as to its predecessor, the B738. This data is real data and not modelled. What scrutiny of the daa's modelling did ANCA conduct?

ANCA provided a document titled 'Assessment of Aircraft Noise Modelling' in Appendix F of their draft decision. This study was conducted by Noise Consultants Ltd. In section 3.27 it states that:

3.27 The Applicant has validated its modelling by comparing modelling aircraft noise event levels (in terms of Sound Exposure Level (SEL)) with those measured by the Airport's Noise and Track Keeping (NTK) System. The Applicant has relied on data measured at three of the airport's noise monitoring terminals (NMTs) over the period January and December 2018.

What verification was done by Noise Consultants Ltd?

Noise Consultants Ltd reference the BAP document 'A11267_19_RP035_4.0, Dublin Airport North Runway Relevant Action Application, Noise Information – ANCA Request, February 2021 (https://www.fingal.ie/sites/default/files/2021-08/20210723-a11267_19_rp035_4.0-noise-information_anca-rfi-incl.-figures-red.pdf).

Under AEDT validation, BAP state that the results from the Dublin Airport Noise and Track Keeping (NTK) system have been used for noise validation purposes, specifically the results from noise monitors 1, 2 and 20 for 2018. The AEDT software has been used to predict the noise level at the noise monitors using the recommended AEDT aircraft type. And this has been compared to the measured averages for the aircraft types. Where differences between measured and predicted results were found to be significant then adjustments were made to the model. The adjustments are shown in Table A2.55.

Bickerdike Allen Partners
Architecture Acoustics Technology

Table A2.55: Modifications to AEDT Default Assumptions

Aircraft Type	Arrivals		Departures		
	AEDT Type	Adjustment (dB)	AEDT Type	Profile	Adjustment (dB)
A306	A300-622R	-3.1	A300-622R	30KFT	+0.6
A319	A319-131	-1.4	A319-131	30KFT	+0.9
A320	A320-211	-0.7	A320-211	USER	-1.3
A320neo	A320-211	-2.0	A320-211	USER	-3.2
A321	A321-232	-0.4	A321-232	USER	-0.5
A332	A330-301	-1.3	A330-301	30KFT	-1.1
A333	A330-301	-1.1	A330-301	30KFT	-0.8
ATR72	SD330	+1.5	SD330	30KFT [2]	+0.1[3]
B734	737400	+0.4	737400	30KFT	-0.1
B738	737800	-2.7	737800	USER	-1.2
B738MAX	7878max	-3.0	7378max	USER	-1.5
B752	757RR	-0.4	757RR	30KFT	-2.3
B772	777200	+0.2	777200	30KFT	+1.5
B773	777300	-0.8	777300	30KFT	-2.4
B787	7878R	-0.3	7878R	30KFT	+0.1
E190	EMB190	-0.8	EMB190	30KFT	+0.5
RJ85	BAE146	-3.3	BAE146	30KFT [2]	-1.6
DH4[1]	SD330	0	DHC6	30KFT [2]	0

These adjustments are critical to the evaluation of the noise situation at Dublin Airport. What data has Noise Consultants Ltd interrogated to prove that the 'B738MAX' should be adjusted by -3.0dB for arrivals and -1.5dB for departures?

It is very evident from the LAmax values for 2019 that noise levels for B738 and B38M aircraft types are similar at the noise monitors and therefore it's not credible that noise can be reduced by replacing B738s with B38Ms alone. There is a fundamental problem with the noise modelling that ANCA have failed to justify.

This is proven by the numbers provided by the daa as presented above and are not a fabrication. ANCA must review this data again and reconsider their position.

FORECASTS

Another rather strange anomaly in the daa's application is the fact that their forecasts for 2025 Proposed in Table 13B-5 of the revised EIAR show **0** flights of the 737 Max (B38M) during the night period. There will be 14,316 movements of this newest of Ryanair's fleet during the day and evening but 0 during the night. How is this possible? This is also supported by the Reporting Template 'FleetMove' showing 0 flights at night with 2025 Proposed. In fact, there's 0 flights for 2025 Permitted but oddly enough there are more 737 Max movements in 2025 Permitted than 2025 Proposed (15617 vs 14316). Why would that be?

Have the daa artificially inflated the Noise Quota figures at night by not using the quieter aircraft?

Have ANCA or their consultants analysed these fleet movements?

Have ANCA or their consultants analysed the differences in fleet movements between the original EIAR and the revised EIAR? Have the daa explained the reasons for the differences?

Here are the differences in aircraft types between 2025 Relevant Action (initial EIAR) and 2025 Proposed (revised EIAR):

Annual Night Difference		
-976	Airbus	A306
-976	Airbus	A319
-1302	Airbus	A320
325	Airbus	A320neo
0	Airbus	A321
975	Airbus	A321neo

325	Airbus	A330
325	Airbus	A330neo
0	Airbus	A350
0	ATR	42
650	ATR	72
0	BAe	146/Avro RJ
-325	Boeing	737-400
-325	Boeing	737-700
2601	Boeing	737-800
-651	Boeing	737 MAX
0	Boeing	757
651	Boeing	767
0	Boeing	777
0	Boeing	777X
-326	Boeing	787
0	Bombardier	CS300
0	Bombardier	Dash 8
326	Embraer	E190/195
	Embraer	E190-E2

-651	Other	
647	Total	

2601 more 737-800s and 651 less 737 Max aircraft types. What has caused that shift in Ryanair's fleet usage between the initial and revised EIARs?

These are the questions that independent regulators should be asking. It's not acceptable to just state it's a revised forecast. Revised based on what knowledge?

The airlines should be forced to fly the latest technology aircraft only at night and heavily penalised otherwise.

If the daa state that the 737 max are not overnighting in Dublin, then this proves that the quietest aircraft are not being incentivised to stay overnight and fly at night. It would also show that the Ryanair model is not point to point and aircraft can be routed anywhere.

Further anomalies are contained in the hourly movements depicted in Tables 13B-10, 13B-12 of Appendix 13B in the EIAR for 2025 Proposed vs 2025 Permitted. Between 06:00-06:59 there are 20 more movements with 2025 Proposed compared with 2025 Permitted. But between 07:00-08:00 there are 18 less flights with 2025 Proposed. So, the overall net gain between 2025 Proposed and 2025 Permitted in the timeframe 06:00-08:00 is only **2** movements.

Tables 13B-10, 13B-12, Appendix 13B	2025 Proposed		2025 Permitted			
	28L	28R	28L	28R	Diff	
00:00-00:59	12	0	7	0	5	0
01:00-01:59	9	0	8	0	1	0
02:00-02:59	3	0	2	0	1	0
03:00-03:59	0	0	0	0	0	0
04:00-04:59	8	0	6	0	2	0
05:00-05:59	10	0	11	0	-1	0
06:00-06:59	22	15	17	0	5	15
07:00-07:59	29	22	40	29	-11	-7
08:00-08:59	22	12	25	8	-3	4
09:00-09:59	24	17	26	14	-2	3
10:00-10:59	18	18	18	21	0	-3
11:00-11:59	20	19	20	19	0	0
12:00-12:59	28	23	28	22	0	1
13:00-13:59	19	21	15	22	4	-1
14:00-14:59	20	20	19	18	1	2
15:00-15:59	15	23	14	21	1	2
16:00-16:59	25	20	25	19	0	1

17:00-17:59	22	20	20	19	2	1
18:00-18:59	20	24	21	20	-1	4
19:00-19:59	20	22	23	20	-3	2
20:00-20:59	12	18	10	20	2	-2
21:00-21:59	14	9	16	8	-2	1
22:00-22:59	26	5	31	6	-5	-1
23:00-23:59	18	1	9	0	9	1

This is clear evidence from the daa's own forecasts that in their busiest time of the day between 06:00-08:00 the only net gain of changing Conditions 3(d) and 5 is the gain of an additional **2** flights.

It also totally contradicts the daa's request to operate dual runways in mixed mode between 06:00-08:00. It also contradicts the IAA's support of the daa's decision for mixed mode operations during these hours.

A request under the AIE regulations was made to the IAA to justify their submission to the planning process where they supported the use of mixed mode operations between 06:00-08:00.

- It is considered essential to use both runways for departure between the hours of 06:00 to 08:00 (local time), due to the demand for the first wave of departures to take off from Dublin during this period. The

The IAA have provided no meaningful data to qualify this statement in answer to the AIE request. The daa's hourly forecasts do not support this decision.

In the BAP report titled 'Dublin Airport North Runway Relevant Action Application, Noise Information Request February 2021', BAP also make reference to the IAA response, but the 3

criteria outlined by BAP for switching to mixed mode are not met in 2025 based on the forecasts given by the daa.

> Given the IAA response to the application, which stresses the importance of using both runways for departures between 06.00-08.00 this has been allowed for in all the scenarios except those where the North Runway is not used at night, and those for 2022 as the forecast activity is noticeably less than occurred in 2018.
>
> For the remaining hours the method assumes activity switches from segregated mode to mixed mode where activity is such that any of the three following single runway capacity limits are exceeded:
>
> i. More than 35 arrivals in one hour.
> ii. More than 44 departures in one hour.
> iii. More than 48 movements (combined arrivals and departures) on one runway in one hour.

These fleet movements are available to be scrutinised, but no such scrutiny has been provided in ANCA's analysis to date. What direction was given by ANCA to its consultants in this regard?

The IAA have again reiterated their claim that it is essential to use both runways for departure during the 06:00-08:00 period in their latest submission to ANCA. They state that there was an average of 80 movements during these 2 hours in 2019. Again, the night-time period covers just 1 hour of this period 06:00-07:00. I again reference the criteria from BAP above governing the switch from segregated to mixed mode. The IAA have failed to produce any data to justify their claims. The 2025 forecast from the daa from Tables 13B-12 in Appendix 13B show that there are more movements (90) between 11:00-13:00 than 06:00-08:00 (88) with the proposed scenario in 2025 and yet neither the IAA nor the daa are calling for dual runway usage in this time period. In fact, with 2035 Proposed there are the same 90 movements between 11:00-13:00 compared with 88 between 06:00-08:00. Based on the daa's forecasts there is no necessity for mixed mode operations between 06:00-08:00. ANCA needs to refute these claims as the data is clear and unambiguous.

Table 13B-12: Average Annual Day Runway Usage By Hour – Westerly Operations, Proposed Scenarios

Hour	2022 Proposed		2025 Proposed		2035 Proposed	
	28L (South)	28R (North)	28L (South)	28R (North)	28L (South)	28R (North)
00:00-00:59	9	0	12	0	12	0
01:00-01:59	6	0	9	0	9	0
02:00-02:59	3	0	3	0	3	0
03:00-03:59	0	0	0	0	0	0
04:00-04:59	7	0	8	0	8	0
05:00-05:59	10	0	10	0	10	0
06:00-06:59	2	28	22	15	22	15
07:00-07:59	9	32	29	22	29	22
08:00-08:59	19	11	22	12	22	12
09:00-09:59	16	14	24	17	24	17
10:00-10:59	11	12	18	18	18	18
11:00-11:59	12	14	20	19	20	19
12:00-12:59	24	10	28	23	28	23
13:00-13:59	16	18	19	21	19	21
14:00-14:59	15	15	20	20	20	20
15:00-15:59	13	21	15	23	15	23
16:00-16:59	22	16	25	20	25	20
17:00-17:59	18	16	22	20	22	20
18:00-18:59	15	21	20	24	20	24
19:00-19:59	20	17	20	22	20	22
20:00-20:59	11	17	12	18	12	18
21:00-21:59	12	9	14	9	14	9
22:00-22:59	22	5	26	5	26	5
23:00-23:59	17	0	18	1	18	1

Note: All values rounded to nearest whole number

It is also worth noting that the figures in 13B-12 appear to be the 92-day summer average movements and not the annual average movements as they do not match the annual average figures in the daa's reporting template but are closer to the summer figures.

Using the figures for 2025 and 2035 proposed in the reporting template, the average number of flights between 06:00-07:00 is 33 and 45 between 07:00-08:00. The figure for 11:00-13:00 is 80.

Comparing 2018 and 2019 to 2025 and 2035 we see a small growth (5) in average movements between 06:00-08:00 but the figures are below the movements for 11:00-13:00.

These figures using annual average movement show that the 06:00-07:00 time period is not the busiest time at Dublin Airport and therefore does not warrant dual runway usage.

Annual Average	2018	2019	2025	2035

06:00-07:00	30	31	33	33
07:00-08:00	41	42	45	45
11:00-12:00	37	39	35	35
12:00-13:00	40	40	45	45

Extending this analysis to the average summer movements we again find that the hour 06:00-07:00 is not the busiest.

Summer average	2018	2019	2025	2035
06:00-07:00	34	35	36	36
07:00-08:00	45	44	50	50
11:00-12:00	41	42	38	38
12:00-13:00	43	43	50	50

From reviewing the night-time movements on the 'Diurnal' tab of the reporting template one can see that the 06:00-07:00 period is in the bottom half of hourly movements. Thus, the evidence from the daa's forecasts given to ANCA in the Reporting template provide undisputable evidence that dual runway operations are not required between 06:00-07:00.

Noise Consultants Ltd were asking the same questions when analysing the origins of Condition 3(d) and 5. From a FOI request to ANCA (FOI/2021/164), record 16 titled 'NJ1087C-2-D1 Origins of Conditions.pdf' discusses the origins of Conditions 3 and 5. In section 6.7 the

authors, Noise Consultants Ltd' state that '*What is not clear is why daa would seek to change Condition 3(d) as well as Condition 5*':

6.7 What is not clear is why daa would seek to change Condition 3(d) as well as Condition 5. This poses the following questions:

1. What are the drivers for seeking to change both Condition 5 and Condition 3(d) i.e. demand or operational freedoms?
2. What benefit does daa see in lifting or changing Condition 3(d) if the existing runway could potentially handle existing demand? i.e. by lifting Condition 5 alone
3. In connection to 1, are daa exploring how by lifting Condition 3(d) this may provide different noise abatement outcomes as part of lifting Condition 5?;
4. What forms of restriction could daa bring forward instead of Condition 5?

These questions have not been answered in the planning application. As stated in 6.7, lifting Condition 5 alone could handle existing demand.

Further questioning of the need for dual runway use was given in a pre-planning document from ANCA dated October 2nd, 2019, ref PPC 106276 (CA 19.01).

2. Slide 4

"Condition 3d (limiting night operations to a single runway) does not in itself act as an additional constraint, as it provides sufficient capacity for a 65/night limited schedule. However, in the absence of the Condition 5-night movement limit, there is a requirement for dual runway operations between 06:00-07:00 and 23:00-23:59 to meet demand."

At the moment there is understood to be 114 movements per night. This statement about using dual runway operations does not seem justified when the current single runway operation appears to meet this demand?

It is noted that Slide 26 assumes 45 movements per hour for single runway operation, which is in line with a previous report prepared by NATS in 2003 which suggested 43 per hour off the main south runway. If the main use in the night period is from 23:00 to 00:00 and 05:00 to 07:00, 135 movements are provided within these 3 hours plus a few overnight, suggesting up to 160 movements over 8 hours before capacity is insufficient off one runway, which could take them to 2032 according to Slide 13.

This pre-planning document highlights how ANCA are aware that dual runway operations are not required for 2025 as a single runway is sufficient to meet demand up to 2032. Why has ANCA now agreed to dual runway usage and inflicting adverse health effects on more areas, when not required?

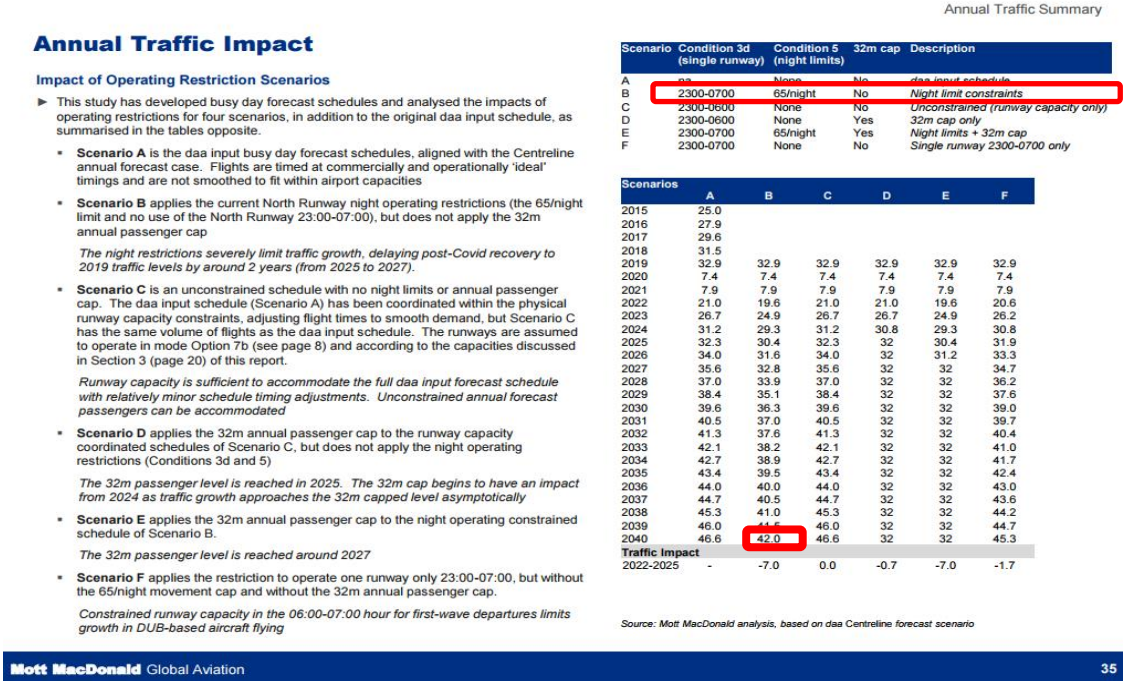
2025 PERMITTED VS PROPOSED

From the analysis of Tables 13B-10 and 13B-12 in Appendix 13B of the revised EIAR above, it is evident that the 2025 Permitted forecast only accounts for 60 flights during the night-time period. This is underutilisation of the 65-movement limit of Condition 5 of the North Runway's planning permission. The daa are inflating the difference figures between 2025 Proposed and 2025 Permitted.

Based on data from the Mott MacDonald report from the EIAR appendices (Dublin Airport Operating Restrictions Quantification of Impacts on Future Growth Updated analysis in response to the ANCA RFI June 2021 - version 1.3.1 (Final)):

- Dublin Airport can achieve 42m passengers by 2040 whilst retaining the night-time operating restrictions but removing the 32m passenger cap (scenario B)
- This proves that the objectives of the National Aviation policy (2015) can be met whilst protecting the health of residents and retaining restrictions
- Retaining the operating restrictions does not hinder growth at Dublin Airport

Annex B of Appendix A Dublin Airport Night Quota System Proposal – Response to RFI



Annual Traffic Summary

Annual Traffic Impact

Impact of Operating Restriction Scenarios

► This study has developed busy day forecast schedules and analysed the impacts of operating restrictions for four scenarios, in addition to the original daa input schedule, as summarised in the tables opposite.

- **Scenario A** is the daa input busy day forecast schedules, aligned with the Centreline annual forecast case. Flights are timed at commercially and operationally 'ideal' timings and are not smoothed to fit within airport capacities
- **Scenario B** applies the current North Runway night operating restrictions (the 65/night limit and no use of the North Runway 23:00-07:00), but does not apply the 32m annual passenger cap

  The night restrictions severely limit traffic growth, delaying post-Covid recovery to 2019 traffic levels by around 2 years (from 2025 to 2027).
- **Scenario C** is an unconstrained schedule with no night limits or annual passenger cap. The daa input schedule (Scenario A) has been coordinated within the physical runway capacity constraints, adjusting flight times to smooth demand, but Scenario C has the same volume of flights as the daa input schedule. The runways are assumed to operate in mode Option 7b (see page 8) and according to the capacities discussed in Section 3 (page 20) of this report.

  Runway capacity is sufficient to accommodate the full daa input forecast schedule with relatively minor schedule timing adjustments. Unconstrained annual forecast passengers can be accommodated
- **Scenario D** applies the 32m annual passenger cap to the runway capacity coordinated schedules of Scenario C, but does not apply the night operating restrictions (Conditions 3d and 5)

  The 32m passenger level is reached in 2025. The 32m cap begins to have an impact from 2024 as traffic growth approaches the 32m capped level asymptotically
- **Scenario E** applies the 32m annual passenger cap to the night operating constrained schedule of Scenario B.

  The 32m passenger level is reached around 2027
- **Scenario F** applies the restriction to operate one runway only 23:00-07:00, but without the 65/night movement cap and without the 32m annual passenger cap.

  Constrained runway capacity in the 06:00-07:00 hour for first-wave departures limits growth in DUB-based aircraft flying

Scenario	Condition 3d (single runway)	Condition 5 (night limits)	32m cap	Description
A	[illegible]	None	No	*daa input schedule*
B	2300-0700	65/night	No	*Night limit constraints*
C	2300-0600	None	No	*Unconstrained (runway capacity only)*
D	2300-0600	None	Yes	*32m cap only*
E	2300-0700	65/night	Yes	*Night limits + 32m cap*
F	2300-0700	None	No	*Single runway 2300-0700 only*

Scenarios	A	B	C	D	E	F
2015	25.0					
2016	27.9					
2017	29.6					
2018	31.5					
2019	32.9	32.9	32.9	32.9	32.9	32.9
2020	7.4	7.4	7.4	7.4	7.4	7.4
2021	7.9	7.9	7.9	7.9	7.9	7.9
2022	21.0	19.6	21.0	21.0	19.6	20.6
2023	26.7	24.9	26.7	26.7	24.9	26.2
2024	31.2	29.3	31.2	30.8	29.3	30.8
2025	32.3	30.4	32.3	32	30.4	31.9
2026	34.0	31.6	34.0	32	31.2	33.3
2027	35.6	32.8	35.6	32	32	34.7
2028	37.0	33.9	37.0	32	32	36.2
2029	38.4	35.1	38.4	32	32	37.6
2030	39.6	36.3	39.6	32	32	39.0
2031	40.5	37.0	40.5	32	32	39.7
2032	41.3	37.6	41.3	32	32	40.4
2033	42.1	38.2	42.1	32	32	41.0
2034	42.7	38.9	42.7	32	32	41.7
2035	43.4	39.5	43.4	32	32	42.4
2036	44.0	40.0	44.0	32	32	43.0
2037	44.7	40.5	44.7	32	32	43.6
2038	45.3	41.0	45.3	32	32	44.2
2039	46.0	[illegible]	46.0	32	32	44.7
2040	46.6	42.0	46.6	32	32	45.3
Traffic Impact						
2022-2025	-	-7.0	0.0	-0.7	-7.0	-1.7

Source: Mott MacDonald analysis, based on daa Centreline forecast scenario

Mott MacDonald Global Aviation 35

On page 5 of the Mott MacDonald report, it is claimed that there'll be a 2-year delay in reaching 32 million passengers due to the night-time restrictions:

timings and are not smoothed to fit within airport capacities

- **Scenario B** applies the current North Runway night operating restrictions (the 65/night limit and no use of the North Runway 23:00-07:00), but does not apply the 32m annual passenger cap

  The night restrictions severely limit traffic growth, delaying post-Covid recovery to 2019 traffic levels by around 2 years (from 2025 to 2027).

- **Scenario C** is an unconstrained schedule with no night limits or annual passenger cap. The daa input schedule (Scenario A) has been coordinated within the physical runway capacity constraints, adjusting flight times to smooth demand, but Scenario C has the same volume of flights as the daa input schedule. The runways are assumed to operate in mode Option 7b (see page 8) and according to the capacities discussed in Section 3 (page 20) of this report.

  Runway capacity is sufficient to accommodate the full daa input forecast schedule with relatively minor schedule timing adjustments. Unconstrained annual forecast passengers can be accommodated

Scenarios	A	B	C	D	E	F
2015	25.0					
2016	27.9					
2017	29.6					
2018	31.5					
2019	32.9	32.9	32.9	32.9	32.9	32.9
2020	7.4	7.4	7.4	7.4	7.4	7.4
2021	7.9	7.9	7.9	7.9	7.9	7.9
2022	21.0	19.6	21.0	21.0	19.6	20.6
2023	26.7	24.9	26.7	26.7	24.9	26.2
2024	31.2	29.3	31.2	30.8	29.3	30.8
2025	32.3	30.4	32.3	32	30.4	31.9
2026	34.0	31.6	34.0	32	31.2	33.3
2027	35.6	32.8	35.6	32	32	34.7
2028	37.0	33.9	37.0	32	32	36.2
2029	38.4	35.1	38.4	32	32	37.6
2030	39.6	36.3	39.6	32	32	39.0
2031	40.5	37.0	40.5	32	32	39.7

The annual average fleet movement and diurnal figures from the Reporting Template for 2022 and 2025 Permitted show the daa's calculations don't utilize the full available 65 flight limit compared with the Proposed scenarios. The figures show an average of 42 night-time movements in 2022 and 53 movements in 2025.

Keeping the restrictions and utilizing the full available 65 movement limit, capacity can increase to

- 20.6 million passengers in 2022
- 31 million passengers in 2025

Scenario (Data from Reporting Template)	Total Movements per year	Total Movements per day	Movements 07:00 - 23:00	Annual Average Movements 23:00 - 07:00	Total Passengers Per Year	Loading Factor	Reported Passenger Loss	Under utilisation of 65 flights	Revised Total Passengers Per Year
2022 Permitted	165840	456	414	42	19600000	118		1000427	**20600427**
2022 Proposed	175737	483	415	68	21000000	119	1400000		21000000
2025 Permitted	226772	623	570	53	30400000	134		592567	**30992567**
2025 Proposed	235882	648	561	87	32000000	136	1600000		32000000

And note these calculations do not allow for any further rescheduling of flights between 07:00-23:00.

In 2015, almost 24.9m passengers passed through Dublin Airport (https://www.cso.ie/en/releasesandpublications/er/as/aviationstatistics2015/). 24.9m is the same as the daa's forecast for 2023, where they state that 1.8m passengers are lost due to the restrictions. So, 2015 is a good proxy for 2023.

Data provided by the daa to the Community Liaison Group (CLG) show that for 5 months of the year in 2015 the monthly average movements at night were less than 65.

Year	Month	Average daily movements	# > 65	Monthly movements	Passengers
2015	January	54			
	February	53			
	March	56			
	April	69	4	120	15000
	May	77	23	372	46500
	June	86	21	630	78750
	July	89	24	744	93000
	August	84	19	589	73625
	September	81	16	480	60000
	October	76	11	341	42625
	November	64			
	December	60			
	Total		118	3276	409500

Based on the 24.9m passengers and 198000 movements (https://www.dublinairport.com/docs/default-source/resources/presentation-boards-(2)-(1).pdf?sfvrsn=8224dd1e_2), the loading factor can be calculated as 125.

Based on the table above with the movements > 65 and the loading factor of 125, the number of passengers carried beyond the 65-limit equated to 409,500.

But factor in that the airport will now have a second runway in 2023 compared to 2015 that can accommodate extra capacity, it is a reasonable statement to make that extra flights can be handled during the daytime with the extra runway.

The daa's figure of a loss of 1.8m passengers for 2023 is incredulous when compared to 2015 where a similar passenger number was handled.

It is a reasonable statement to make that the daa's projections on passenger numbers are not credible and exaggerate any passenger losses.

Another strange anomaly with the revised EIAR figures compared with the original EIAR is that the original EIAR showed a constrained value of 30.9 million passengers in 2025 whereas the revised EIAR shows a lower constrained value of 30.4 million. Why would the revised EIAR have a lower constrained value compared to the original EIAR? No explanation given and none sought by ANCA or its consultants. It is very obvious that the daa's figures in the revised EIAR are bloated to inflate a larger loss in passenger numbers.

Dec '20 EIAR				Revised EIAR		
Year	Unconstrained	Constrained	Difference	Proposed	Permitted	Difference
2021	20.7	20.7	0	7.9	7.9	0
2022	29.6	28.7	-0.9	21	19.6	-1.4
2023	30.4	29.3	-1.1	26.7	24.9	-1.8
2024	31.2	30.1	-1.1	30.8	29.3	-1.5
2025	32	30.9	-1.1	32	30.4	-1.6
Total			**-4.2**			**-6.3**

This underutilisation of the 65-movement limit in the daa's figures has further implications for the cost-effective analysis and the costs associated with delays in reaching 32 million passengers. The fleet forecasts feeding into the cost-effective analysis figures have not been interrogated by ANCA or its consultants and have been accepted without scrutiny. This is not acceptable for an Independent Noise Regulator. The costs attributed in the cost-effect analysis will need to be recomputed as a result.

INVESTOR PROSPECTUS

The daa have stated in an investor prospectus document (https://www.daa.ie/wp-content/uploads/2021/09/Tap-2028-Prospectus.pdf) that in the absence of a planning determination before August 2022 the new North Runway would become operational with the planning restrictions in force. The document states that the daa does not anticipate a decision by ABP until Q1 2024. Therefore, losses should only be considered post Q1 2024 if a decision is made to retain the restrictions. The restrictions are currently in place as conditions of the North Runway planning and therefore losses should only be considered when the planning process concludes in Q1 2024. Any losses before Q1 2024 are fictitious in nature and should be removed from the cost-effective analysis. ANCA does not have a magic wand to switch on/off the restrictions in 2022.

It is very clear from the ICAO Guidance on the Balanced Approach and EU598/2014 that the Forecast without new measures should include the existing operating restrictions.

Matters relating to the new parallel runway development at Dublin airport may impact the Group

In August 2007, a 10-year planning permission was granted for a new parallel runway at Dublin airport. In March 2017, the planning permission was extended by a further five years to August 2022. Initial enabling works on the new parallel runway commenced in late 2016 and the main runway construction works commenced in February 2019. Construction of the new parallel runway is nearing completion, and this will be followed by a commissioning and testing phase which is expected to be completed in the summer of 2022.

A condition of the 2007 planning permission is that on completion of the new parallel runway, the average number of late night and early morning aircraft movements at Dublin airport shall not exceed 65 between 23:00 hours and 07:00 hours. A further condition restricts the use of the new parallel runway between 23:00 and 07:00 hours, save where safety, emergency or other similar circumstances require that it be used during those hours.

The Group has been involved in a process seeking to amend and replace these conditions and mitigate the risks associated with them. In this respect, daa lodged a planning application with Fingal County Council ("**FCC**"), the "competent authority", in December 2020 for the purposes of the Aircraft Noise (Dublin Airport) Regulation Act 2019. In the absence of a planning determination before August 2022, the date that the 2007 planning permission expires, the new parallel runway would become operational with the onerous conditions in place for the period up to when a determination is received from FCC. It is not clear what the timeframe for the potential conclusion of the planning application process is and the current estimate is that a decision will issue from FCC in quarter 3, 2022. If the decision is appealed by a third party, as expected, a decision from the appeal board, An Bord Pleanála, is anticipated in quarter 1, 2024. This uncertainty could have an adverse impact on the Group's ability to plan for the deployment of capacity at Dublin Airport. These conditions could result in a period, potentially up to quarter 1, 2025, where Dublin airport would be forced to operate at a reduced capacity for certain times of the day thereby impacting the throughput capability in that period. In such circumstances, no assurances can be given that there would be no material adverse effect on the Group's business, results of operations, prospects and/or financial condition.

It is also worth noting the Proceedings of the 2nd Phenomena project Workshop. In section 2.2.6 Air Traffic Management it states that consideration should be given to incorporate noise emission constraints in the EU Slot Regulation. It also states that:

"*According to the stakeholders interviewed, the reduction of noise sources stemming from international legislation is the best long-term solution for eliminating environmental noise. However, in the short term, the most efficient measures are the change of flight routes,* ***night flight bans*** *and the implementation of the "****'polluter pays'' principle*** *for early morning/late evening flights. For instance,* ***the introduction of Lmax reception limits at night*** *could be considered a solution to avoid noisy flight operation*".

This is also reinforced in the policy suggestions for Aviation:

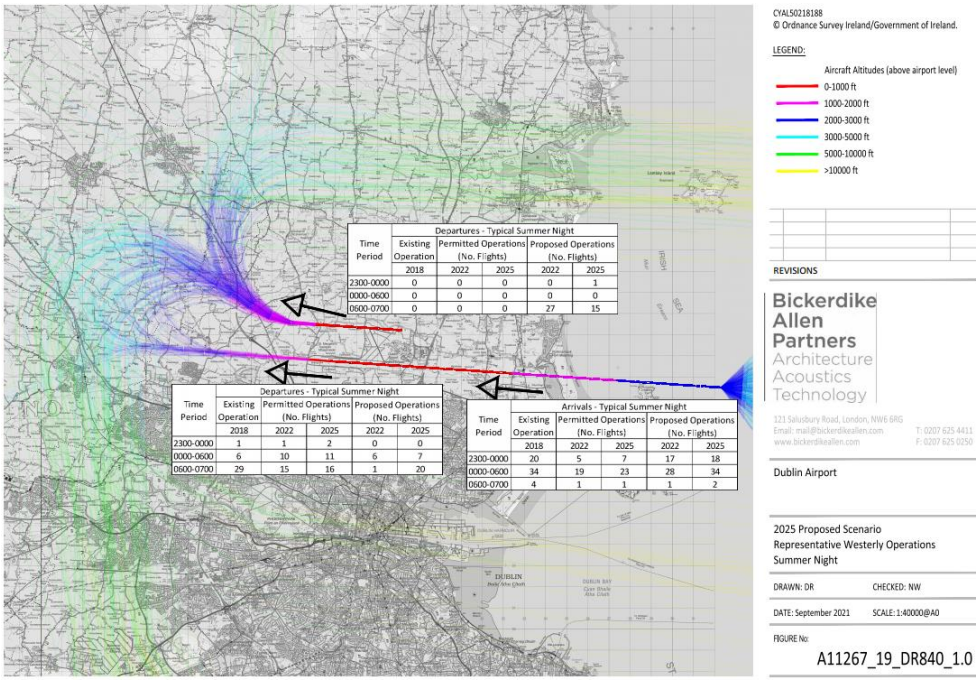
3. Policy Suggestions for Aviation

Aircraft noise

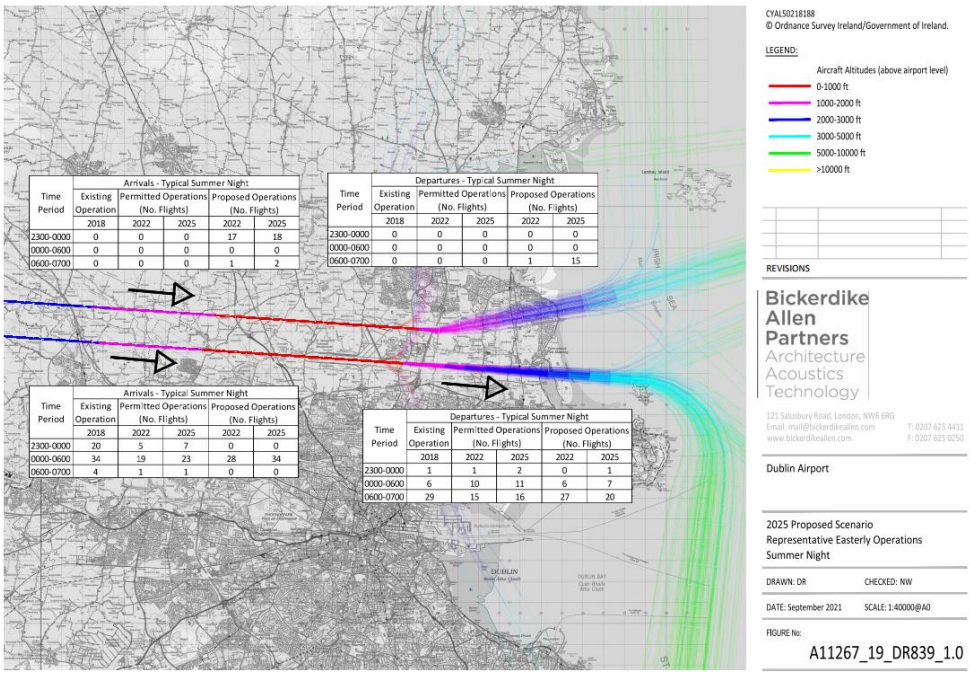
- Based on the NAPs, **operational and traffic management initiatives** are one of the key instruments for meeting noise thresholds in and around airports
- No room for tightening vehicle limits, since this is regulated at global level (ICAO)
- At EU level a **fleet replacement with quieter aircraft** may be implemented (through incentives or non-addition/non-operation rules)
- **Avoiding noisy operations at night** (based on Lmax, not on margin to certification limits) – reception limits
- At Airport level **3D-optimised flight procedures** should be considered
- At Airport level **stakeholder engagement/dialogue** with public should be fostered
- **Land use planning** should be improved to avoid encroachment
- Consider **extension of END/BAR to smaller airports** (<50.000 mov), since many of those experience significant growth. Opportunity to avoid noise issues (rather than correct them) in short-medium term

On the daa's portal they they provide Heat maps for 2025 Proposed Easterly and Westerly operations

Westerly Operations:



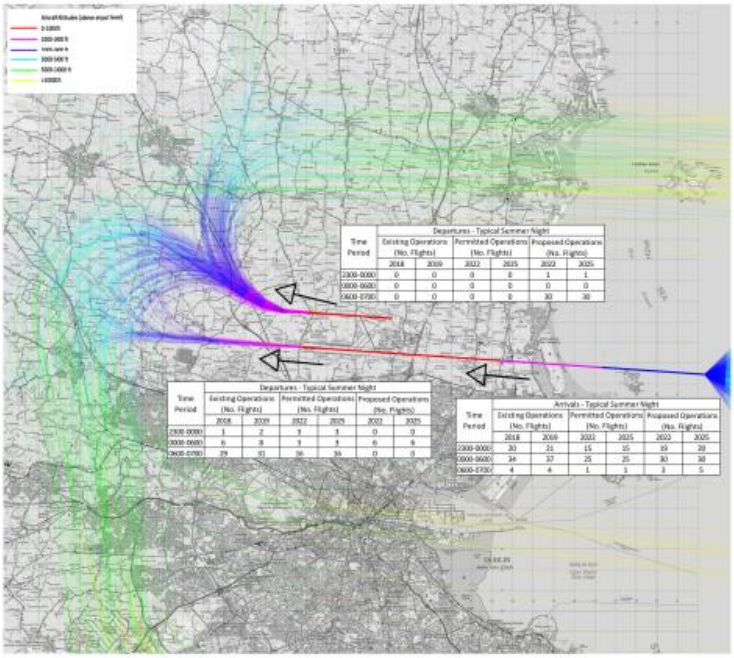
Easterly Operations:



On the daa's portal, they provide a document titled 'Operation, Assessment and next steps'. In this document they show the Heat maps based on the original Relevant Action application.

Easterly Operations Relevant Action:

Westerly Operations Relevant Action:



In the Heat maps for the initial EIARs, no movements are shown on the North Runway for Easterly Operations. In total it shows 37 departures on the South Runway for the night period with 30 departing between 06:00-07:00. Comparing that to the revised application, there are now 15 departures on the North Runway in an Easterly direction and 20 on the South Runway between 06:00-07:00.

For Westerly Operations, the initial EIAR shows 37 departures on the North Runway with 30 occurring between 06:00-07:00. The revised EIAR has 15 departures on the North Runway and 20 on the South Runway for Westerly Operations.

There has been no rationale put forward by the daa for the change in operations between the revised and initial EIARs and why the number of departures on the runways has changed. The net effect of these changes is a serious increase in the number of people affected by noise which is not addressed by the daa or ANCA.

Comparing the 2025 Proposed application in the revised EIAR to the 2025 Relevant Action in the initial EAIR we find:

- **63k** more people affected by day-time noise (>45dB Lden)
- **94k** more people affected by night-time noise (>40dB Lnight)
- **11.3k** more people Highly Annoyed
- **12.6k** more people Highly Sleep Disturbed

It is incredulous that ANCA have not seen to address the question why the revised EIAR should be accepted compared with the original EIAR.

Comparing Tables 13B-4 in the revised EIAR and Table 13B-7 from the initial EIAR we find that the total forecast movements with 2025 Proposed is 235,883 compared with 240,788 movements with the original 2025 Relevant Action.

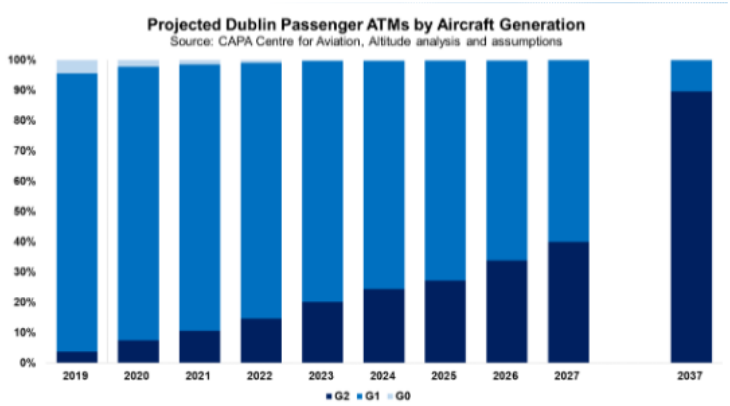
2025 Proposed has a lower number of movements but a far worse effect on the population affected by noise. This is of serious concern and ANCA needs to answer questions why it accepts this 2025 Proposed scenario when it effects a far larger population with respect to noise. And furthermore, it allows less flights.

These forecasts are incredulous, and it appears that the daa are making them up as they go along to fit their agenda. They want mixed mode operations for the future, but the analysis put forward here clearly shows that it is not needed for this regulatory decision.

Attention is also drawn to Appendix G slide 4 where the different Aircraft Generation types are discussed (G0, G1 and G2):

Aircraft Generations

- To aid comparisons, we have adopted the aircraft generation definitions used by Mott MacDonald in its analysis.
- Generation 0 (G0):
  - Older aircraft types, typically developed in the 1970s or 1980s and now generally out of production.
  - E.g. B737 Classic (300/400/500), B757, B767, A300, A310.
- Generation 1 (G1):
  - Current aircraft types, typically developed in the 1990s or 2000s and still in production.
  - E.g. B737NG (700/800/900), B777, A320 series, A330, A340, A380, Bombardier CRJ, Embraer EJets, Avro RJ, Bombardier Q400, ATR42/72.
- Generation 2 (G2):
  - Latest aircraft types recently entering production or under development.
  - E.g. B737MAX, B787, B777X, A320neo, A330neo, A350, A220 (aka Bombardier CSeries), Embraer EJet E2, Sukhoi Superjet.



This clearly shows that the B737MAX and A320neo are G2 type aircraft.

However, in the DRD Report, Table 7.1 incorrectly lists the B737MAX and A320neo as G1 type aircraft instead of G2:

Table 7.1: Fleet mix for Dublin Airport in 2019

Annual Movements in 2019						
Aircraft Type	Noise Chapter	Generation	Annual Day	Annual Eve	Annual Night	Annual 24hr
Airbus A300	3	G0	0	0	0	0
Airbus A306	4	G0	162	301	377	840
Airbus A319	4	G0	3,159	911	370	4,440
Airbus A320	4	G0	41,840	10,109	6,796	58,745
Airbus A320neo	14	G1	1,000	119	13	1,132
Airbus A321	3	G0	5,461	907	1,086	7,454
Airbus A321neo	14	G1	619	87	158	864
Airbus A330	4	G0	8,905	40	2,031	10,976
Airbus A330neo	14	G1	0	0	0	0
Airbus A350	14	G1	214	0	220	434
ATR 42	4	G0	2,124	273	2	2,399
ATR 72	4	G0	14,398	2,481	1,089	17,968
BAe 146/Avro RJ	14	G0	4,280	767	207	5,254
Boeing 737-400	4	G0	196	547	527	1,270
Boeing 737-500	4	G0	89	1	4	94
Boeing 737-700	4	G0	1,001	298	104	1,403
Boeing 737-800	4	G0	58,447	18,855	12,136	89,438
Boeing 737 MAX	14	G1	251	6	103	360

Table 7.2 incorrectly lists 0% of G2 type aircraft movements in 2019:

Table 7.2: Fleet mix for 2019 by Noise Chapter and Generation

ICAO Chapter	Annual Day	Annual Eve	Annual Night	Annual 24hr
3	4.4%	3.6%	6.1%	4.4%
4	82.8%	86.8%	86.5%	84.0%
14	7.4%	4.8%	5.7%	6.7%
N/A	5.5%	4.8%	1.8%	4.9%
Generation	**Annual Day**	**Annual Eve**	**Annual Night**	**Annual 24hr**
G0	96%	99.3%	95.1%	96.9%
G1	3.4%	0.7%	4.9%	3.1%
G2	0.0%	0.0%	0.0%	0.0%
N/A	0.0%	0.0%	0.0%	0.0%

And in Table 7.7 ANCA show 0% of G2 aircraft forecast which is incorrect and does not match the information in Appendix G and the daa's own forecasts.

3.0 COST EFFECTIVENESS ANALYSIS

SUMMARY

- The reports on cost effectiveness submitted by the daa exclude quantification of costs associated with the adverse health effects inflicted on residents. This item was specifically requested by ANCA and was not provided by the daa. We in St Margarets The Ward as citizens were expecting this information to be presented to us as requested by ANCA. We refer to our submission on Public Health where we have evaluated the costs associated with the adverse health effects inflicted on us which indicated that the total yearly cost based on the 2019 figures is a staggering 610 million euro. How are we expected to suffer these costs to protect our health?
- The cost effectiveness analysis (CEA) submitted by Ricondo does not meet the requirements of EU598/2014 as it does not take into account of the current flight restrictions in place at Dublin Airport. The report therefore is misleading and inaccurate.
- The cost effectiveness analysis as submitted by Ricondo does not take into account the costs associated with Carbon Emissions nor does it indicate the costs in meeting Ireland's requirements under the Climate Action and Low Carbon (Amendment) Act 2021 for the proposed revision to the current restrictions.
- The EIAR submitted does not meet the requirements set out in the EPA guidance as it does not take into account the foreseeable and planned increase in passenger numbers above 32 million passengers and is considered 'project splitting'.

COST EFFECTIVENESS ANALYSIS

Ricondo made revisions to their 'Forecast Without New Measures and Additional Measures Assessment Report' and their 'Cost Effectiveness Analysis Report' (CEA) in the revised further information application. The basis of these reports is the use of the 'Forecast without new measures' scenario.

'Forecast without new measures' as defined in EU598/2014 Annex I (2) include developments *'already approved and in the pipeline*'. This clearly relates to the new North Runway and associated planning conditions. It's also clear that future growth beyond 32m passenger should be considered.

2. Forecast without new measures

2.1. Descriptions of airport developments, if any, already approved and in the pipeline, for example, increased capacity, runway and/or terminal expansion, approach and take-off forecasts, projected future traffic mix and estimated growth and a detailed study of the noise impact on the surrounding area caused by expanding the capacity, runways and terminals and by modifying flight paths and approach and take-off routes.

2.2. In the case of airport capacity extension, the benefits of making that additional capacity available within the wider aviation network and the region.

2.3. A description of the effect on noise climate without further measures, and of those measures already planned to ameliorate the noise impact over the same period.

2.4. Forecast noise contours — including an assessment of the number of people likely to be affected by aircraft noise — distinguishing between established residential areas, newly constructed or planned residential areas and planned future residential areas that have already been granted authorisation by the competent authorities.

2.5. Evaluation of the consequences and possible costs of not taking action to reduce the impact of increased noise, if it is expected to occur.

3. Assessment of additional measures

3.1. Outline of the additional measures available and an indication of the main reasons for their selection. Description of those measures chosen for further analysis and information on the outcome of the cost-efficiency analysis, in particular the cost of introducing those measures; the number of people expected to benefit and the timeframe; and a ranking of the overall effectiveness of particular measures.

3.2. An overview of the possible environmental and competitive effects of the proposed measures on other airports, operators and other interested parties.

3.3. Reasons for selection of the preferred option.

3.4. A non-technical summary.

In a pre-planning document from 9th of June 2020 (PPC 106276) titled 'ANCA interim response to pre-application consultation on cost effectiveness', interim comments of ANCA are given in response to the cost effectiveness presentation by the daa at a Section 247 meeting on April 2nd, 2020.

The document refers to the definition of the Baseline and makes reference to 'forecast without new measures' as defined in EU598/2014 in Annex I (2.3):

> Definition of the Baseline
> In a cost-effectiveness assessment, a baseline is used as the counterfactual against which alternative options are compared. A typical baseline would use a 'forecast without new measures', which is referred to in Annex I of Reg598:
>
> *"A description of the effect on noise climate without further measures, and of those measures already planned to ameliorate the noise impact over the same period."*

ANCA further refine its definition of 'forecast without new measures':

> This definition of the 'forecast without new measures' implies the inclusion of all existing measures. This would be akin to the 'current consented north runway operation upon opening' and the 'future forecast north runway operation' as described within the Aircraft Noise Information Reporting Template Guidance. These scenarios describe what would happen if no changes are made to the Airport's existing noise management and restrictions. However, it is noted that the applicant may wish to replace some existing measures with alternatives. Consequently, including existing measures in the baseline would make it challenging to compare the 'consented situation' to other noise mitigation measures. ANCA therefore strongly recommends excluding existing noise mitigation measures and restrictions that the applicant is proposing to replace, from 'the forecast without new measures'.

ANCA incorrectly recommends excluding existing noise mitigation measures and restrictions. ANCA have misinterpreted Annex I (2.3). The way to read 2.3 is as follows:

"A description of the effect on noise climate without further measures, and ('*a description of the effect*') of those measures already planned to ameliorate the noise impact over the same period".

It is clear that An Bord Pleanála included Conditions 3(d) and 5 to ameliorate the noise impact.

This interpretation is also backed up by the fact that the existing operating restrictions are not mentioned in section 3, Assessment of additional measures.

Ricondo have taken ANCA's interpretation and excluded conditions 3(d) and 5 from their definition of 'forecast without new measures':

"*The cost-effectiveness evaluation of measures for achieving the NAO for Dublin Airport will be based on calculating the ratio between cost and the reduction in the number of people exposed*

to a selected unit compared to the future "do nothing" noise exposure levels. The "do nothing" scenario represents a forecast situation resulting from revoking, replacing, or amending an operating restriction and maintaining existing noise mitigation measures; it does not include new noise measures. The Aircraft Noise Regulation identifies this condition as the Forecast without New Measures scenario as described in Annex I. The Forecast without New Measures scenario for this North Runway Aircraft Noise Regulation analysis includes existing and planned noise measures and revoking Conditions 3(d) and 5 of the permission granted to Dublin Airport to develop Runway 10L-28R (North Runway)."

The EPA EIAR Guidelines (https://www.epa.ie/publications/monitoring--assessment/assessment/EPA_EIAR_Guidelines.pdf) include a definition of the 'do-nothing' alternative scenario. It '*should consider the effects of projects which already have consent but are not yet implemented*'.

Environmental Impact Assessment Reports | Draft Guidelines

3.4.2 'DO-NOTHING' ALTERNATIVE

The range of alternatives can include a 'do-nothing' alternative[70] where appropriate. This examines trends currently occurring at the site, for example likely land use changes or other interventions, the likely effects of climate change, and the significance of these changing conditions. It can be particularly useful when assessing effects caused by projects which themselves are designed to alleviate environmental or infrastructural problems, e.g. waste treatment facilities, flood relief projects, road building, etc.

The do-nothing alternative is a general description of the evolution of the key environmental factors of the site and environs if the proposed project did not proceed. It is similar to but typically less detailed than the 'likely future receiving environment' description discussed in *section 3.6 Describing the Baseline*.

It should consider the effects of projects which already have consent but are not yet implemented. It may also be appropriate to consider other projects that are planned but not yet permitted. For example, it would be prudent to consider a significant project for which a planning application has been lodged even if the consent decision has not been issued.

The do-nothing alternative should describe consequences that are reasonably likely to occur. It ought not be used to exaggerate or catastrophize environmental consequences that may occur without the proposed project.

To further confuse the situation, the EIAR makes reference to the 'Do Nothing' scenario in section 4.3.4. It states that the 'Do Nothing' scenario is the current North Runway Planning Permission. It equates the 'Do Nothing' scenario to the 'Permitted' scenario. It is therefore very

clear that the EIAR and CEA documents have conflicting definitions of the 'Do Nothing' and 'forecast without new measures' scenarios.

Scope of Alternatives to be Studied

Do Nothing Scenario

4.3.4 The 'do nothing' scenario is the current North Runway Planning Permission, or the Permitted Scenario. The North Runway Planning Permission contains 31 planning conditions. Two of these planning conditions, no. 3(d) and 5, relate to operating restrictions on the use of the runways and overall number of permitted flights at night, and these are due to come into force once the North Runway is operational in 2022. The Permitted Scenario is therefore, in effect, the 'do nothing' scenario. The key differences between the Permitted Scenario and the Proposed Scenario, as discussed in *Chapter 2: Characteristics of the Project*, are that there is a slower return to the 32mppa Cap in the Permitted Scenario (2027, versus 2025 in the Proposed Scenario) and that there would be fewer flights during night-time in the Permitted Scenario.

The EPA EIAR Guidelines also provide a definition in section 3.6 of the 'Baseline' scenario. The section gives examples of consented projects and how they should be assessed.

Examples	
(a) Water discharge	Water quality in a river to which a water discharge is proposed is going to improve due to an already permitted upgrade to a water treatment plant upstream of the project, which will be operational before the time of the proposed new discharge. In this case the EIAR should assess the impact of the proposed discharge against the receiving baseline water quality which will occur when the project is built.
(b) Expansion of Industrial Site	Where an intensification of other operations on a site have already been permitted but are not yet operational at the time of the assessment, then emissions from the proposed expansion should be assessed against the increased emissions levels which would apply when the intensification of operations has occurred.
Scenarios In the case of the examples above, if it is not certain if the change will be in effect before commencement of the proposed project then the impact of the proposed project may be assessed against two scenarios, i.e. with and without the water treatment plant upgrade in example (a) and with and without the intensifications of other operations in example (b). It is important to ensure that the *worst case-scenario* is assessed. This is the scenario that would be likely to give rise to the most significant environmental impacts.	

The daa have stated in an investor prospectus document (https://www.daa.ie/wp-content/uploads/2021/09/Tap-2028-Prospectus.pdf) that in the absence of a planning determination before August 2022 the new North Runway would become operational with the planning restrictions in force. The document states that the daa does not anticipate a decision

by ABP until Q1 2024. Therefore, it's clear that the baseline scenario and 'forecast without new measures' is the runway operational with the planning restrictions, conditions 3(d) and 5, in place.

Matters relating to the new parallel runway development at Dublin airport may impact the Group

In August 2007, a 10-year planning permission was granted for a new parallel runway at Dublin airport. In March 2017, the planning permission was extended by a further five years to August 2022. Initial enabling works on the new parallel runway commenced in late 2016 and the main runway construction works commenced in February 2019. Construction of the new parallel runway is nearing completion, and this will be followed by a commissioning and testing phase which is expected to be completed in the summer of 2022.

A condition of the 2007 planning permission is that on completion of the new parallel runway, the average number of late night and early morning aircraft movements at Dublin airport shall not exceed 65 between 23:00 hours and 07:00 hours. A further condition restricts the use of the new parallel runway between 23:00 and 07:00 hours, save where safety, emergency or other similar circumstances require that it be used during those hours.

The Group has been involved in a process seeking to amend and replace these conditions and mitigate the risks associated with them. In this respect, daa lodged a planning application with Fingal County Council ("**FCC**"), the "competent authority", in December 2020 for the purposes of the Aircraft Noise (Dublin Airport) Regulation Act 2019. In the absence of a planning determination before August 2022, the date that the 2007 planning permission expires, the new parallel runway would become operational with the onerous conditions in place for the period up to when a determination is received from FCC. It is not clear what the timeframe for the potential conclusion of the planning application process is and the current estimate is that a decision will issue from FCC in quarter 3, 2022. If the decision is appealed by a third party, as expected, a decision from the appeal board, An Bord Pleanála, is anticipated in quarter 1, 2024. This uncertainty could have an adverse impact on the Group's ability to plan for the deployment of capacity at Dublin Airport. These conditions could result in a period, potentially up to quarter 1, 2025, where Dublin airport would be forced to operate at a reduced capacity for certain times of the day thereby impacting the throughput capability in that period. In such circumstances, no assurances can be given that there would be no material adverse effect on the Group's business, results of operations, prospects and/or financial condition.

As a result of not having a decision by ABP until Q1 2024, losses should only be considered post Q1 2024. The restrictions are currently in place as conditions of the North Runway planning and therefore losses should only be considered when the planning process concludes in Q1 2024. **Any losses before Q1 2024 are fictitious in nature and should be removed from the cost-effective analysis**. And there's no guarantees that the planning process will conclude in Q1 2024 as alluded to by the daa in the financial prospectus. Losses can not be attributed to the daa's failure to get the planning restrictions removed by the time the North Runway opens this year. The daa have been trying to remove these restrictions since the 2015/2016 when it

embarked on a consultation process. That was 6 years ago. They cannot claim losses for the cost-effectiveness analysis as a result of their own incompetence. It is clear that the 'Forecast without new measures' should include the existing operating restrictions and any changes to planning should be compared against that scenario.

In a pre-planning document 'Ricondo CEA ANCA Workshop DRAFT 20200320.pdf', presented to the daa on March 31th 2020, Ricondo present their cost effective analysis strategy. On slide 6 they incorrectly specify the 'Do Nothing' scenario, conflicting with the EIAR and the EPA Guidelines. They include the North Runway but exclude the operating restrictions which are attached to the North Runway planning consent. They also assume mixed-mode runway use for 24-hour period which is contrary to the planning of the North Runway. This is a major error on behalf of Ricondo.

DRAFT

Situation Zero

- Annex I of Regulation 598/2014 – "Forecast without New Measures" – a study of the forecast noise impact on the surrounding area caused by expanding the capacity, runways and terminals and/or by modifying flight paths and approach and take-off routes without implementing further new measures is required
- Represents the "Do Nothing" forecast noise environment – €0 cost and zero effectiveness
- Serves as baseline to assess forecast noise compared to noise abatement objective – defines potential noise issues or concerns
- "Do Nothing" should represent forecast noise exposure based on:
  - Inclusion of North Runway
  - Existing noise reduction measures
  - Arrival and departure flight procedure concepts proposed in second consultation phase and corresponding NPR corridors
  - No operation restrictions or new noise reduction measures
  - Forecast operations and fleet mix
  - Assumes mixed-mode runway use for 24-hour period

SOURCE :daa, July 2019 (accessed at https://www.dublinairport.com/north-runway)

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ICAO

The ICAO 'Guidance on the Balanced Approach to Aircraft Noise Management' publication (https://global.ihs.com/doc_detail.cfm?&input_search_filter=ICAO&item_s_key=00507943&item_key_date=890221&input_doc_number=9829&input_doc_title=&org_code=ICAO) sets out the Baseline case. The "*base-case noise situation is that which currently exists and that which is expected to exist at given points in the future taking into account all noise mitigation actions that are already planned*". This clearly identifies the approved planning restrictions as being part of the base-case.

Part I. The Balanced Approach to Aircraft Noise Management
Appendix 2. Analytical methodologies/tools *I-A2-9*

5.4 Identifying the base-case

5.4.1 A starting point for the analysis must be defined in order to measure or assess the change in noise exposure that may be expected to occur should a particular noise reduction measure be chosen and implemented. This starting point, which reflects the noise situation around the airport as it currently exists, taking into account existing noise controls and current operating and land-use regulations, typically is referred to as the "baseline" or "base-case." The baseline/base-case noise situation may also be referred to as the "no further action scenario" because it is the noise scenario that is expected to occur based on existing plans with no additional action.

5.4.2 While the base-case noise situation is supposed to reflect aircraft-related noise under existing conditions, considering the noise situation at a single point in time usually would not be deemed sufficient to truly assess the situation. Rather, the noise situation should be assessed over a projected time period, taking into account what is known about the fleet mix over that time period, traffic, operational procedures, existing management plans, agreed future noise controls, and noise mitigation actions. In such a case, the base-case noise situation is that which currently exists and that which is expected to exist at given points in the future taking into account all noise mitigation actions that are already planned. Any additional noise mitigation measure that is not agreed would be outside the base-case.

5.4.3 The length of time over which the noise situation is projected should be sufficiently long to take into account changes in the fleet mix, the longer term nature of airport planning and other factors. As noted in Chapter 3, a common approach is to establish a baseline noise assessment that examines noise in the present and into the future over a period of time established by authorities (e.g. five-year and ten-year intervals).

5.4.4 Once the base-case noise situation over a specified time period has been identified, it can be compared with the noise situation that would be expected should a particular noise reduction measure be adopted.

In section 3.7 of the ICAO document, it states that when establishing the baseline, measures such as noise abatement operational procedures and **existing operating restrictions** should be taken into account.

3.7.4 In addition to any information that may be available in an existing management plan, other current and agreed-to noise mitigation measures should be taken into account in establishing the baseline. These would include measures such as noise abatement operational procedures and existing operating restrictions. They may also include noise reductions at source based on expected noise performance improvements to an operator's fleet as a result of technology developments and fleet renewal.

DRAFT REGULATORY DECISION

In ANCA's draft regulatory decision report (https://consult.fingal.ie/en/system/files/materials/15666/DRD%20Report%2011%20November%202021_0.pdf), chapter 9 focuses on the Cost Effectiveness Analysis. In section 9.1, ANCA state the use of the number of people HSD and exposed to a noise level > 55dB Lnight. Day time should not be excluded in this analysis. ANCA should look at the full noise picture and not just the night-time subset. In the Oral Hearing of 2007, Mr. Rupert Thornely-Taylor commented on the interaction of daytime and night-time movements in his report. Therefore, ANCA has erred by not including the HA figures and population > 65dB Lden as per the draft NAO.

In ANCA's Cost Effectiveness Methodology and Results report (Appendix J), they outline their choice of metrics. In section 1.3 they define the Forecast without new measures (baseline scenario) and exclude Conditions 3(d) and 5 which is contrary to EU598/2014 and the ICAO's definitions in their 'Guidance on the Balanced Approach to Aircraft Noise Management' document.

In section 1.3.1, ANCA state that they have not had sight of the Applicant's passenger forecasting model and relied solely on the Applicant's consultants Mott MacDonald. Why did ANCA just accept these figures? Why didn't ANCA insist on requesting the passenger model? These are critical to the decision-making process. How can an independent regulator rely on an Applicant's consultants? This is a matter of grave concern and raises questions over the independence of ANCA.

In section 1.3.2 ANCA state that in the daa's FWNM scenario, that arrivals are split evenly between the two runways. This contravenes Option 7b where runway 28L should be preferred for arrivals during westerly operations and runway 10R shall be preferred for departures for easterly operations.

ANCA show how the NAO targets can be met without Conditions 3(d) and 5. But they use 2019 as the comparison year. Why not use 2007 when the Runway was awarded Planning Permission? This regulatory decision is a change to the planning permission granted in 2007 and so an obvious choice of reference year should be 2007.

In section 1.3.2.1 ANCA incorrectly state the number of people exposed to a night-time noise priority will be 16 by 2025. This contradicts with the 75-figure given by the daa in their excel sheet 'a11267_19_ca437_2.0-summary-of-results-including-mitagation.xlsx'.

Section 1.3.3 contains errors in the description of the runway operations:

- Runway 10L or 10R, as determined by air traffic control, is preferred for arriving during easterly winds, and Runway 28L is the preferred runway for arriving aircraft during westerly winds.

- Runway 10R is the preferred runway for departing aircraft during easterly winds and either Runway 28L or 28R is used for departing aircraft as determined by air traffic control during westerly winds.

The description of FWNM (P06) clearly shows that it does not follow the Option 7b mode. It makes no sense whatsoever to exclude Option 7b. This is described in Conditions 3(a-c) and not being changed by the applicant. Option 7b was a mode of operation put forward by the daa at the Oral Hearing in 2007. The FWNM outlined by ANCA is a flawed scenario and both the daa's and ANCA's cost-effectiveness analysis need to be recomputed.

In section 1.4.2 ANCA discuss the night-time noise insulation scheme and compare various scenarios. In a pre-planning consultation in November 2020 (Note the daa lodged their application one month later in December 2020), the daa proposed a scheme whereby they insulated dwellings >55dB Lnight in 2025 and those >=50dB Lnight in 2022 and experienced a +9dB change compared with 2018. This document shows that the daa were intending to insulate 325 new dwellings. This scenario is not presented in the analysis by ANCA. This alternative should have been compared as an alternative and especially as it had been used in a pre-planning consultation with ANCA.

:

NOISE INSULATION GRANT SCHEME

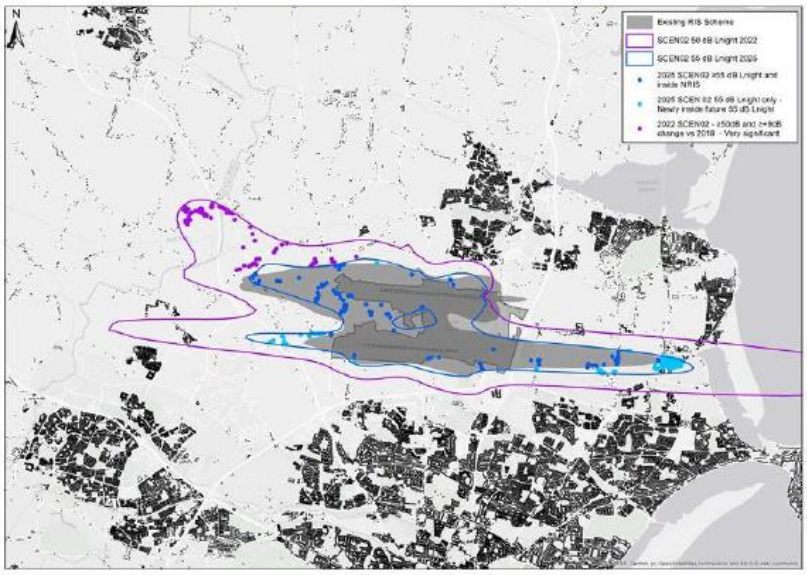
A grant scheme for the installation of sound insulation measures up to a value of €20,000 for dwellings:

- Forecasted to be exposed to night-time noise levels of at least 55 dB L_{night} in 2025 or
- Forecasted to be exposed to noise levels greater than 50 dB L_{night} in 2022 arising from a change of at least 9 dB when compared with 2018.

Eligibility within the 55 dB Lnight contour will be reviewed every 2 years with revised forecasts.
The night insulation scheme is considered additional to the existing daytime noise insulation scheme currently provided in accordance with Condition 7 of North Runway planning permission and the current scheme (based on 2016 contours).

Night Noise Insulation Grant Scheme

Based on exposure to noise levels >=55dB L_{night} 2025 or L_{night} >= 50dB (2022) and change >=+9dB
325 additional properties eligible noise insulation grant (over that currently covered by the NRIS).



	Dwellings
Total >=55dB Lnight 2025	360
Total >=50dB with +9dB change (2022 compared with 2018)	83
TOTAL DWELLINGS IN SCHEME	443
Dwellings already covered by existing NRIS	118
NEW DWELLINGS ELIGIBLE FOR NEW NIGHT NIS Grant	325

There are additional properties eligible under the current daytime scheme not included in these numbers = approx. 90 additional.

The applicant changed their insulation when submitting their application in December 2020. The changed their criteria 2 to those dwellings >50dB Lnight in 2022 and experiencing a +9dB change compared with 2022 Permitted. This provided for 54 dwellings getting insulation on top of the 180 covered by criteria 1. So, the daa had reduced their scheme by 91 dwellings from the pre-planning meeting in November 2020 to the submission in December in 2020.

What is perplexing is that the daa did not consider either of these two scenarios in their cost-effectiveness analysis. They considered either using 2022 or 2025, whereas the pre-planning proposal and their submission both used a combination of 2025 and 2022. Because the applicants preferred case and their initial pre-planning proposal are not considered, the cost-effectiveness analysis is deficient and needs to be amended.

It is clear that the daa's pre-planning proposal insulates more homes than any scenario outlined by ANCA. It uses 2022 for criteria 2 which is the year that the households will experience the sharp rise in noise exposure.

It is also worth mentioning that ANCA did not look at any other alternative except the +9dB change proposed by the daa. They give no reason for doing so and have provided no medical or scientific rationale for this decision. They just accepted the daa's proposal. In table 0-1 they list the criteria for those '**Significantly adversely affected**' by noise. ANCA should be using this definition for insulation purposes. ANCA needs to explain from a health point of view why they would leave people 'significantly adversely affected' by noise when these people's lives could be improved by insulation. ANCA should have costed this proposal. How can ANCA justify the costs in health that society must bear due to these significantly adverse effects? The noise will be imposed on the people by ANCA's decision to revoke the operating restrictions. The people haven't moved to the noise. The responsibility to bear these costs should then be borne by Fingal County Council and ANCA.

Table 0-1: The Applicant's thresholds for determining if a person is significantly adversely affected

Noise indicator	Threshold based on absolute noise exposure and increase in noise exposure compared with a situation
L_{den}	Exposed to noise levels between 45 dB and 50 dB L_{den} and an increase at or higher than 9 dB
	Exposed to noise levels between 50 dB and 55 dB L_{den} and an increase at or higher than 6 dB
	Exposed to noise levels between 55 dB and 65 dB L_{den} and an increase at or higher than 3 dB
	Exposed to noise levels between 65 dB and 70 dB L_{den} and an increase at or higher than 2 dB
	Exposed to noise levels 70 dB L_{den} or higher and an increase at or higher than 1 dB
L_{night}	Exposed to noise levels between 40 dB and 45 dB L_{night} and an increase at or higher than 9 dB
	Exposed to noise levels between 45 dB and 50 dB L_{night} and an increase at or higher than 6 dB
	Exposed to noise levels between 50 dB and 55 dB L_{night} and an increase at or higher than 3 dB
	Exposed to noise levels between 55 dB and 60 dB L_{night} and an increase at or higher than 2 dB
	Exposed to noise levels 60 dB L_{night} or higher and an increase at or higher than 1 dB

Source: Ricondo, daa

It is also worth pointing out that the 7th EAP referenced 'High' noise levels as levels above 55dB Lden and 50dB Lnight. When have ANCA chose to ignore these 'High' levels from the 7th EAP?

This reference to the 7th EAP is also referred to in the EEA's 'The European environment – state and outlook 2020' report:

BOX 11.1
EU noise indicators

The Environmental Noise Directive (END) defines two important noise indicators to be used for noise mapping and action planning:

L_{den}: Long-term average indicator designed to assess annoyance and defined by the END. It refers to an A-weighted average sound pressure level over all days, evenings and nights in a year with an evening weighting of 5 dB and a night weighting of 10 dB.

L_{night}: Long-term average indicator defined by the END and designed to assess sleep disturbance. It refers to an A-weighted annual average night period of exposure.

High noise levels are defined in the 7th EAP as noise levels above 55 dB L_{den} and 50 dB L_{night}. ■

BOX 11.2
The 2018 Environmental noise guidelines for the European region (WHO, 2018)

In 1999 and 2009 the World Health Organization (WHO) published guidelines to protect human health from exposure to community noise and night noise. Since then there has been a substantial increase in the number and quality of studies on environmental noise exposure and health outcomes. Following the Parma Declaration on Environment and Health, adopted at the Fifth Ministerial Conference (2010), the Ministers and representatives of Member States in the WHO European Region requested WHO to develop updated guidelines on environmental noise. To this end, WHO commissioned systematic reviews to assess the relationship between environmental noise and health outcomes such as cardiovascular and metabolic effects, annoyance, effects on sleep, cognitive impairment, hearing impairment and tinnitus, adverse birth outcomes, and quality of life, mental health and well-being. These reviews are the basis for the development of the recommended noise levels above which negative effects on health begin according to our best knowledge. ■

Reducing noise below these levels is recommended (WHO, 2018).

	Road	Rail	Aircraft
L_{den}	53 dB	54 dB	45 dB
L_{night}	45 dB	44 dB	40 dB

It is also worth pointing out that ANCA's Director Ms Ethna Felton stated on a Webinar given by ANCA that the draft decision provides for more houses to be insulated. This is a false and inaccurate statement. AS proven by the above analysis, ANCA did not compare the daa's proposal and are incorrectly comparing the scenario C6 to the 2022 scenarios C1, C3 and C5.

This mistake by ANCA is inexcusable. ANCA's draft decision insulates fewer houses than the daa's submission. It's also noticeable that ANCA's decision reduces the insulation in The Ward and Coolquay areas, where the residents will experience a very significant rise in noise exposure in 2022 due to the North Runway opening.

Having a Noise Regulator reduce the number of houses that an applicant wanted to insulate is a very worrying and alarming situation and calls into question the competency of the regulator.

ANCA go on to state that the "*The Applicant's preferred long-term measure is Scenario P02 with a noise insulation variant B. This results in an increase in the number of HSD people compared to the FWNM, but is relatively cost effective at minimising the number of people exposed to night-time noise priority*".

Variant B is not what the applicant is proposing and the definition in Table J9 is incorrect.

Table J9: Noise insulation measures based on different RSIGS eligibility criteria

Measure	Insulation scheme eligibility criteria
Applicant assessed measures	
RSIGS B	A €20,000 grant for noise insulation given to dwellings exposed to noise levels exceeding 55dB L_{night} in 2025 and not eligible under existing noise insulation schemes

Please refer to the Anderson Acoustics document 3870-RGIGS dated July 2021 (https://northrunway.exhibition.app/assets/pdf/documents/13_Proposed_Sound_Insulation_Grant_Scheme.pdf) where a detailed description of the scheme is outlined.

1. Dwellings forecast to be exposed to "high" night-time noise levels in 2025 - at least 55dB Lnight.
2. Dwellings with a "very significant" rating arising from forecast noise levels of at least 50dB Lnight in the first full year when the Relevant Action comes into operation, with a change of at least +9dB when compared with the current permitted operation in the same equivalent year.

"Criteria 2 eligibility is based on forecasts for the first year of operation of the Relevant Action. For the purposes of the application and the assessment this has been assumed to be 2022".

Land Use Planning. Residential Sound Insulation Grant Scheme.

Minimising the potential for significant adverse effects arising from Scenario 2.

- Consistent with the application of the ICAO Balanced Approach, daa is proposing a Residential Sound Insulation Grant Scheme (RSIGS) as part of the package of measures submitted in support of the planning application and associated EIA (Relevant Action) to amend Condition 3(d) and replace Condition 5 of the existing planning permission for the North Runway.
- The RSIGS will make available a grant of up to €20,000 for the installation of noise insulation measures for eligible dwellings.
- Dwellings are considered eligible if they meet either of the following noise related criteria:
  1. Dwellings forecast to be exposed to "high" night-time noise levels in 2025 - at least 55dB L_{night}.
  2. Dwellings with a "very significant" rating arising from forecast noise levels of at least 50dB L_{night} in the first full year when the Relevant Action comes into operation, with a change of at least +9dB when compared with the current permitted operation in the same equivalent year.
- These proposals are additional to the North Runway Insulation Scheme (NRIS) from Condition 7 of the North Runway Planning Permission.
- Properties that have received noise insulation measures through the existing HSIP scheme would not be eligible for the RSIGS. Upon operation of the Relevant Action the current HSIP scheme will come to an end - the NRIS and the RSIGS will form the noise insulation scheme offers for Dublin Airport.
- It is also proposed that dwellings approved for construction after the December 2020 Relevant Action Application that fall within any of the noise insulation areas would not be eligible for either scheme.

Initial Criteria 1 eligibility for the grant scheme will be based on the initial 2025 forecast presented in the revised EIAR.

Bi-annual, retrospective reviews that align with the reviews of the existing North Runway scheme are proposed. At each review, the actual historic contours will be compared with the forecast for 2025.

Criteria 2 eligibility is based on forecasts for the first year of operation of the Relevant Action. For the purposes of the application and the assessment this has been assumed to be 2022. However, if that year is later than 2022, the +9dB area will be reviewed for the revised first year and adjusted accordingly. It is proposed that the area of eligibility will be reviewed in the year after the Relevant Action comes into operation by comparing the actual +9dB change area with that included as part of the application and will be adjusted accordingly. As this area is only applicable to the change in the first year, this review will happen once.

Final details of the scheme will be finalised and agreed with the Competent Authority in due course, but the approach will utilise the experiences gained on the existing insulation scheme in terms of products and specifications that would be recommended for installation.

The following slides presents the areas of eligibility for each of the criteria.

Consistent with the Environmental Impact Assessment for the Relevant Action Planning Application all analysis is based on GeoDirectory data for 2019 Q2. It is recognised that there maybe some dwellings that have been built since that data was compiled. Prior to finalisation of the scheme details the eligible dwellings will be reviewed to ensure all that all those eligible are included.

Dublin Airport – RSIGS - DRAFT

It is clearly evident that a major overhaul of the cost-effectiveness analysis with respect to insulation schemes needs to be undertaken.

In section 1.6.1, ANCA state that the Noise Quota Scheme limit "*has been set such that it would not impose any operating restrictions based on the Applicant's forecasts of ATMs and the fleet mix*".

In section 1.6.2.1 no costs associated with the health costs on the number of people Highly Annoyed and Highly Sleep Disturbed are given. No costs associated with other health issues are given. No costs due to lack of productivity due to noise are given. No costs due to handling the carbon emissions of the aircraft are given.

This section also accepts the daa's estimates of 45,000 fewer flights and 7.1 million fewer passengers, which have been robustly refuted in this submission. Once again one has to question the role of the independent regulator and whether it is fit for purpose and whether it takes its role as regulator seriously or just accepts the data given to it by the applicant. The number of fewer passenger numbers is critical to this regulatory decision and must be forensically examined and challenged by the regulator.

ANCA conclude that the total cost estimate ranges from 88 million euro to 1,023 million euro over the period 2022-26 but exclude health and carbon emission costs.

In section 1.6.2.2, ANCA state that the highest Quota Count will be in 2025 at 15,892 given to it by the daa (once again an acceptance of the daa's figures). They then state that a 16,260 limit can be met without imposing any restrictions on the applicant. This just proves that ANCA's acceptance of the daa's 16,260 limit is designed not to curtail any aircraft movements and is a farcical system. This is further shown in table J22 where the number of people no longer impacted compared with FWNM is 0 for the Noise Quota Schemes for both HSD and Night-time noise priority. This proves that the Noise Quota System is not a mitigation measure and has no effect on noise in its current form. It is deliberately set so high that it facilitates all flight movements. This is not how Noise Quota Systems work in the UK as they are always combined with movement limits. It is astonishing that Noise Consultants Ltd give their backing to such a farcical interpretation of Noise Quota Systems seeing as they are UK based consultants and only too familiar with the Noise Quota Systems in operation in the UK. Once again, we have to call into question the regulator and its consultants with regard to independence.

The final comment in the Cost Effectiveness Methodology and Results report is very interesting and states that:

"*Our lower bound estimate of the cost-effectiveness of the Permitted Operations scenario, suggests it is possible that the restrictions could be more cost-effective than some of the alternatives. But that is assuming the most optimistic outcome in terms of costs*".

So, the Permitted scenario with restrictions could be the most cost-effective outcome. And this is based on no inclusion of costs associated with health and carbon emissions.

HEALTH COSTS

EU598/2014 Annex II states that Competent Authorities may take account of health and safety of local residents and environmental sustainability:

ANNEX II

Assessment of the cost-effectiveness of noise-related operating restrictions

The cost-effectiveness of envisaged noise-related operating restrictions will be assessed taking due account of the following elements, to the extent possible, in quantifiable terms:

(1) the anticipated noise benefit of the envisaged measures, now and in the future;

(2) the safety of aviation operations, including third-party risks;

(3) the capacity of the airport;

(4) any effects on the European aviation network.

In addition, competent authorities may take due account of the following factors:

(1) the health and safety of local residents living in the vicinity of the airport;

(2) environmental sustainability, including interdependencies between noise and emissions;

(3) any direct, indirect or catalytic employment and economic effects.

The 'Aircraft Noise Information Reporting Template Guidance' document from ANCA states in section 3.2 Noise Effects Data, that the assessment of costs of noise exposure should include costs of annoyance and health.

3.2 Noise Effects Data

Using the noise exposure data, the effects information should be provided:

- Assessment of any significant effects of noise on sensitive receptors;
- Assessment of harmful effects due to long term exposure to noise from airport operations, including:
    - Number of people living in dwellings highly annoyed;
    - Number of people living in dwellings highly sleep disturbed;
    - Sub-totals per Electoral Division
        - Where effects are to be reported per Electoral Division, this should be achieved by prefixing the elements presented in the 'Health' tab to report designators for the Electoral Divisions.
- Assessment of costs of noise exposure, including:
    - Costs of annoyance;
    - Costs of health.

CARBON EMISSION COSTS

The CEA report makes no attempt to quantify the costs associated with the adverse health effects inflicted on residents as a result of the proposed Relevant Action. Nor does it quantify the costs associated with the environmental harm of increased aviation activity.

An article in the Guardian newspaper in December (https://www.theguardian.com/environment/2021/dec/22/cleanup-cost-of-heathrow-third-runway-doubles-to-100bn-mps-told) referenced a study by the New Economics Foundation (https://neweconomics.org/uploads/files/NEF-Flying-Low.pdf) suggesting the carbon value or clean-up cost of Heathrow's third runway has increased from £50bn to £100bn, twice the figure presented to ministers and parliamentarians by the Department for Transport in the Airports National Policy Statement (ANPS) in 2018.

Gatwick Airport handled 46million passengers in 2019 and are planning to handle 62million by 2038. But the estimated costs to handle the extra emissions from 2025-2050 is 9billion.

Table 1: The net present value of the departing-flight emissions from eight airport expansions underway across the UK has more than doubled following the revision to BEIS carbon values.

Net present value in £millions (2025 – 2050) of greenhouse gas emissions from new departing flights resulting from eight in-progress UK airport expansions.

	Old 2020 departing emissions value (£m)	New 2021 departing emissions value (£m)	Increase factor	Status
Heathrow	24,998	49,212	2.0	Approved by parliament and courts, awaiting application
Gatwick	4,502	9,196	2.0	Development consent order application process started

The daa handled 32m in 2019 and are forecasting 46m by 2040. So, the growth in passengers between Gatwick and Dublin is comparable and so the cost of 9billion to handle the extra emissions to 2050 should be applicable to Dublin too.

daa and ANCA needs to factor in this cost of emissions. 9billion over 25 years is 360million per year or **1440million** from 2022-2025.

This only factors in the cost of growth in passenger numbers and costs for dealing with existing passenger emissions are excluded.

The Climate Action and Low Carbon (Amendment) Act 2021 was passed in Ireland in July 2021. The Act outlines ambitious air pollution targets. It commits Ireland to:

- Reducing greenhouse gas emissions by 51% by 2030
- Achieving a climate neutral economy by 2050, this is known as the 'national climate objective'

A climate neutral economy is an economy with net-zero greenhouse gas emissions. Net-zero emissions means the amount of emissions produced equals the emissions removed from the atmosphere. This is also known as 'carbon neutrality'.

Ireland's Aviation Policy built on aviation growth is contrary to the Climate Action and Low Carbon Act 2021.

PROJECT SPLITTING

The EPA EIAR Guidelines state that the '*project needs to be considered in its entirety for screening purposes. This means that other related projects need to be identified and assessed at an appropriate level of detail. This will identify the likely significance of cumulative and indirect impacts thus providing the CA (Competent Authority) with a context for their determination. Dividing the project into separate parts so that each part is below an applicable threshold needs to be avoided. This is project-splitting and is not compliant with the Directive'*.

It is very evident that the daa intend to apply for planning permission to increase capacity beyond the existing 32m cap on the Terminals. The daa had applied for an increase in passenger numbers from 32m to 35m in 2019 (F19A/0449) but withdrew their application in June 2020.

It is also very evident from pre-planning material that the daa were having discussions with FCC and ANCA on the Relevant Action to revoke/amend Conditions 3(d) and 5 and also on increasing the passenger capacity to 40m+.

An tÚdarás Inniúil um Thorann Aerárthaí
Comhairle Contae Fhine Gall
Áras an Chontae, Sord,
Contae Átha Cliath,
K67 X8Y2

Aircraft Noise Competent Authority
Fingal County Council
County Hall
Swords
County Dublin,
K67 X8Y2

T: + 353 1 890 5998
E: aircraftnoiseca@fingal.ie
W: www.fingal.ie

An tÚdarás Inniúil um Thorann Aerárthaí
Aircraft Noise Competent Authority

Record of Pre-Application Consultation
Section 247 of the Planning & Development Act 2000 (as amended)

Date: 5th February 2020.

Ref. No.: **PPC 106276 (CA 19.01)** – In relation to the operating restrictions on the North Runway
Ref. No.: **PPC 106336 (CA 20.01)** – In relation to an increase in the Terminals' passenger capacity.

Applicant: DAA

Development Description: Detailed Development Description not given –

1. North Runway –*Relevant Action – to replace Condition 3d and 5 of North Runway permission. These relate to* night-time operations only.

2. & Increase Passenger Capacity 40+ MPPA & Associated Infrastructure.

In their initial EIAR the daa did not include any reference to capacity beyond 32m. In their revised EIAR the daa make reference to 2035 as a future year but restrict the use of 2035 to 32m. This is a clear case of 'project splitting' and the EPA Guidelines make reference to Case Law from the Court of Justice of the European union (CJEU) pointing to this fact.

The inclusion of the pending application to remove the 32m cap is very significant as ABP applied the 32m cap when granting the Terminal 2 planning permission (PL06F.220670) and having regard for transport capacity constraints.

Capacity

3. The combined capacity of Terminal 2 as permitted together with Terminal 1 shall not exceed 32 million passengers per annum unless otherwise authorised by a further grant of planning permission.

Reason: Having regard to the policies and objectives of the Dublin Airport Local Area Plan and capacity constraints (transportation) at the eastern campus.

REASONS AND CONSIDERATIONS (2)

The proposed development of Phase 2 of the terminal building would be premature pending the determination by the road authority of the detailed road network to serve the area and the commitment by the planning authority to design and fund all the external transport elements detailed in the Environmental Impact Statement to facilitate Phase 2. In these circumstances, to expand further the terminal capacity at this location would contravene the objectives EA2, EA3 and TP10 of the Dublin Airport Local Area Plan which seek to provide balanced road infrastructure to manage traffic and to cater for the comprehensive development of the airport.

Section 9 of the EIAR is titled 'Traffic & Transport'. This section only includes passenger numbers up to 32m. Maintaining a 32m cap up to 2035 goes against the aims of the National Aviation Policy for Ireland. This is a serious flaw and reflects the 'project splitting' nature of the application. Failure to take account of the impact of future Transport needs invalidates this planning application and therefore FCC should refuse the application on these grounds alone.

Table 9-1 Assessment Scenarios and forecast passenger growth

	2022		2025		2035	
	Permitted	**Proposed**	**Permitted**	**Proposed**	**Permitted**	**Proposed**
Flight Profile	Without RA	With RA	Without RA	With RA	Without RA	With RA
mppa	19.6	21	30.4	32	32	32

F19A/0449

With reference to F19A/0449, ANCA failed to define the NAO for Dublin Airport after starting the process. ANCA requested noise information from the daa under section 9(10) of the 2019 Act (https://www.fingal.ie/sites/default/files/2019-12/anca-rf01.pdf):

Accordingly, ANCA is now engaged in the process of consultation with the Planning Authority, determining whether the development the subject of F19A/0449 would give rise to a noise problem, in accordance with Section 34B(2) of the PDA.

To assist in making that determination, ANCA is exercising its power to request information under Section 9(10) of the 2019 Act, which provides that ANCA may, for the purposes of an assessment of the noise situation at the airport, direct the applicant to provide ANCA with such information as ANCA may reasonably require. As you are aware, assessment of the noise situation at the airport is one of ANCA's functions under Section 9(1) of the 2019 Act, which is incorporated into the Section 34B process under Section 34B(1)(b) of the PDA.

Appendix A to this letter outlines the specific information sought from daa at this point in the Section 34B process. This information is required to enable ANCA to, in the first instance:

- assess the noise situation at the airport;
- determine whether the proposed increase in the Capacity Limit would give rise to a 'noise problem'; and
- potentially inform the process of setting a Noise Abatement Objective (NAO) for Dublin Airport.

The application was withdrawn by the applicants in June 2020:

Dear Mr Mahon

RE: APPLICATION FOR PLANNING PERMISSION FOR A CHANGE OF USE TO PROVIDE FOR AN INCREASED COMBINED PASSENGER CAPACITY FOR ALL PASSENGER BUILDINGS FROM 32 MILLION PASSENGERS PER ANNUM (MPPA) TO 35 MPPA (OF WHICH 3 MPPA WILL BE CONNECTING PASSENGERS) IN THE TOWNLANDS OF CORBALLIS AND COLLINSTOWN, AT DUBLIN AIRPORT, CO. DUBLIN

FCC Reg Ref: F19A/0449

We refer to the above application and your most recent correspondence dated 9th April 2020. We wish to advise that daa plc has determined that the proposed increase in passenger capacity for all passenger buildings from 32mppa to 35mppa is no longer required in the short term. This is due to the recent impacts of Covid-19 on the number of passengers expected to utilise Dublin Airport over the next 12 – 24 months. As a result, we have advised the planning authority that the planning application is withdrawn pursuant to article 37(1) of the *Planning and Development Regulations 2001 – 2019*.

Future growth in passenger numbers at the airport will continue to be planned for in the long term and a subsequent planning application will be submitted to the planning authority in due course.

I trust that the above is in order and would appreciate a letter of acknowledgement.

Yours sincerely

Gavin Lawlor
Director
Tom Phillips + Associates

After the withdrawal of the application, ANCA decided to discontinue their role in assessing the noise situation at the airport and defining the Noise Abatement Objective (NAO). ANCA had the powers to continue their work and request any noise data from the daa but declined. Querying this decision, ANCA replied on July 15th stating that the data received from the daa was insufficient to facilitate a full assessment of the noise situation:

I refer to your correspondence of 5th July 2020.

I can confirm that planning application F19A/0449 has been withdrawn by the daa. Although the aircraft data as submitted by the airport authority as part of the planning application was informative, it was not sufficient to facilitate a full assessment of the noise situation at the airport. ANCA requested detailed additional information but a response to the request was not received in advance of the application being withdrawn. This information is on the planning section of our website. Notwithstanding this, it is the intention of ANCA that a full aircraft noise assessment will be undertaken for Dublin Airport. I do not have a date for the assessment at this time but can advise that there will be no pre-determined outcome.

There is currently no noise abatement objective for Dublin Airport. ANCA has, however, commenced a review of the noise mitigating measures at the airport under Section 21 of the Aircraft Noise (Dublin Airport) Regulation Act 2019. The outcome of this review will be posted on our website when available. As advised in previous correspondences, a request from you under Section 21(3)(a) can only be progressed when a noise abatement objective is in place at the airport.

Kind regards

Joe Mahon

Aircraft Noise Competent Authority
Fingal County Council | County Hall | Swords | County Dublin, K67 X8Y2

ANCA failed to continue the work of defining the Noise Abatement Objective for Dublin Airport even though it had the powers under section 9(10) of the Act to request the daa to provide any data it required. It is very apparent that ANCA did not want to define the NAO unless there was a planning application lodged by the daa. And one can deduce that ANCA did not want to define the NAO before any planning application was lodged as it might jeopardise the daa's future activities. This action calls into question the true independence of ANCA and raises concerns over a conflict of interest.

4.0 APPROPRIATE ASSESSMENT

In section 3.24 of the AA Natura Impact Statement, it considers that only continuous noise is relevant for bird disturbance as aircraft noise is regular and consistent. This cannot be said of night-time noise and the new airport layout when the North Runway becomes operational. The design of the airspace includes more routes and the number of flights during many of the night-time hours are less than 10. From Table 13B-12 of Appendix 13B, there are just 20 movements between 01:00 and 05:00 or one flight every 12minutes. During 02:00 to 04:00 there are only 3 flights forecast. These rates are not continuous and therefore intermittent noise needs to be assessed also

In section 3.25, it states that aircraft produce sound less than 65dB LAmax below 3000ft when descending. This is contradicted by measurements at the noise monitoring sites around Dublin Airport. In fact, arrivals achieve higher LAmax values at the monitoring sites than departures.

At a Community Liaison Group (CLG) meeting in April 2017 (https://www.dublinairport.com/docs/default-source/meeting-documentation/aircraft-noise-monitoring-datac4fa448b73386836b47fff0000600727.pdf?sfvrsn=8f6e160f_2), a presentation from BAP was given titled 'Aircraft Noise Monitoring Data from Noise Monitoring Terminals (NMTs)'. On slide 15 BAP show a comparison between arrivals and departures for NMT 1 between January to June 2016, and the results show that arrivals achieve on average 80dB LAmax compared to 76dB LAmax for departures:

Bickerdike Allen Partners
Architecture Acoustics Technology

NFTMS Maximum Noise Levels

January to June 2016 - Arrivals

NMT	Monthly Average* Maximum Noise Level, L_{max} dB					
	January	February	March	April	May	June
1	80	80	80	80	80	79

January to June 2016 - Departures

NMT	Monthly Average* Maximum Noise Level, L_{max} dB					
	January	February	March	April	May	June
1	76	76	76	76	76	76

Fig 4.2 of the report is not reflective of the full operations requested by the daa in their application. Fig 4.2 does not show departures to the West from the South Runway nor does it take account fo departures to the East on the North Runway. New routes have been developed in conjunction the IAA and it is important that the AA NIS takes account of these new routes.

The EIAR Appendices include Easterly N60 contours which are of interest of SPAs and SACs:

The additional information report (Appendix J RFI 118) also contains LAmax contours for specific aircraft and of interest are the contours for departures from Runway 10L in the Easterly direction:

This drawing contains Ordnance Survey Ireland data
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LEGEND:

Noise Contours
70 and 80 dB(A) L_{Amax}:

Current Procedure
NADP1
NADP2

Rev	Date	Description	Initials

REVISIONS

Bickerdike
Allen
Partners
Architecture
Acoustics
Technology

123 Salusbury Road, London, NW6 6RG
Email: mail@bickerdikeallen.com T: 0207 625 4411
www.bickerdikeallen.com F: 0207 625 0250

Dublin Airport
NADP Assessment

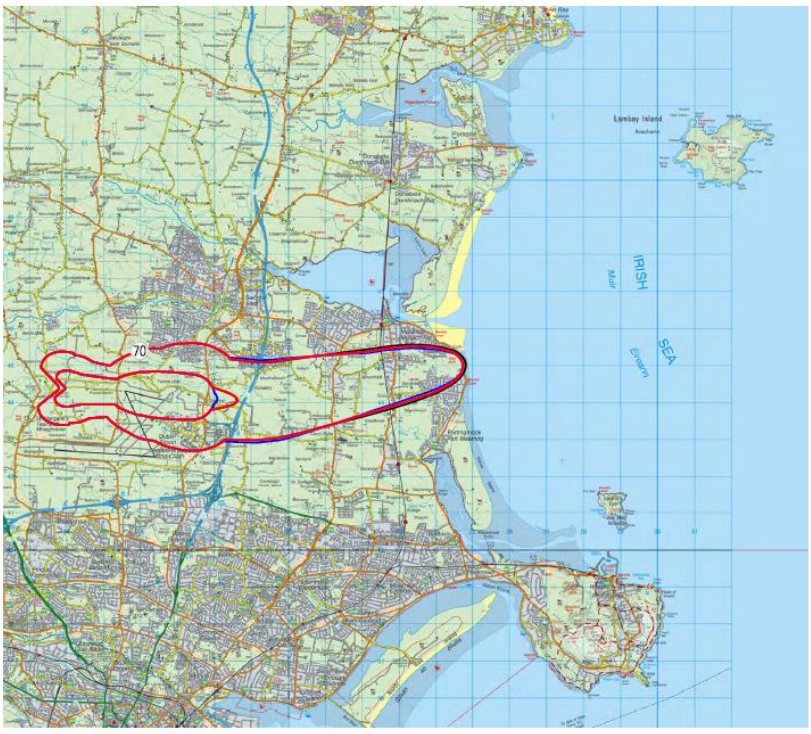
L_{Amax} Noise Contours
Departure Runway 10L
Airbus A330-300

DRAWN: MP CHECKED: DR

DATE: January 2019 SCALE: 1:100000@A4

FIGURE No:

A11219/R02/DR020



This drawing contains Ordnance Survey Ireland data
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LEGEND:

Noise Contours
70 and 80 dB(A) L_{Amax}:

Current Procedure
NADP1
NADP2

Rev	Date	Description	Initials

REVISIONS

Bickerdike
Allen
Partners
Architecture
Acoustics
Technology

123 Salusbury Road, London, NW6 6RG
Email: mail@bickerdikeallen.com T: 0207 625 4411
www.bickerdikeallen.com F: 0207 625 0250

Dublin Airport
NADP Assessment

L_{Amax} Noise Contours
Departure Runway 10L
Boeing 737-800

DRAWN: MP CHECKED: DR

DATE: January 2019 SCALE: 1:100000@A4

FIGURE No:

A11219/R02/DR021

In relation to section 5.6, the daa's 2025 figures show an additional 20 flights between 06:00-07:00, but 18 less flights between 07:00-08:00, a difference of just 2 flights in the 06:00-08:00

timeframe. This is shifting the burden of noise an hour earlier and this needs to be accounted for.

Section 5.18 states that more efficient aircraft will produce less noise. However, as shown in this submission the LAmax figures comparing the more modern B38M aircraft with the older B737 show less than 1dB difference in 2019 at NMT 1 for arriving aircraft and a difference of 1.55dB for departing aircraft. These differences are imperceptible levels. In the Dublin Airport Noise Action Plan (https://www.fingal.ie/sites/default/files/2019-04/NAP%20Final.pdf) it references the change in aircraft types from 2003 to 2017. In 2003 46% of aircraft were quieter aircraft (Chapter 4 and 14), 83% in 2008 and 90% in 2017. Yet noise exposure levels grew exponentially in line with movement increases.

> In 2017 over 90% of aircraft using Dublin Airport were the quietest types (Chapter 4 and 14) compared to 83% in 2008 and 46% in 2003[5].

From the statement made in section 5.22. it is worth considering the noise monitor at the coast road, NMT 20, close to Baldoyle SPA and SAC. Below is the LAmax distribution between July and December 2019. It can be seen that over 60% of movements are greater than 72dB LAmax and over 10% greater than 75dB LAmax.

In the EEA's 'European environment – state and outlook 2020' report, https://www.eea.europa.eu/publications/soer-2020/at_download/file, Box 11.3 refers to the effects of noise on wildlife. It refers to a study by Dominoni et al (2016) which showed that songbird species started their dawn song earlier due to aircraft noise compared to the same species unaffected by aircraft noise. It was also suggested that noise greater than 78dB(A) can impair acoustic communication in birds. This has also been supported by Gil et al (2014) and Sierro et al (2017) who further suggest 'higher fitness costs in relation to daily energy expenditure'.

One of the most studied effects of anthropogenic noise on wildlife is its impact on the singing behaviour of birds (Gil and Brumm, 2013). A study in the forest near Tegel airport in the city of Berlin found that some songbird species started their dawn song earlier than the same species singing in a nearby forest that was less affected by aircraft noise (Dominoni et al., 2016). The authors of the study concluded that the birds in the vicinity of the airport started singing earlier in the morning to gain more time for uninterrupted singing before the aircraft noise set in. In addition, it was found that during the day, chaffinches avoided singing during aircraft take-off when the noise exceeded a certain threshold, 78 dB(A), further suggesting that airport noise can impair acoustic communication in birds. ■

In conclusion the AA Natura impact Statement hasn't fully assessed the expected noise levels at the SPAs and SACs. It has underestimated the noise levels compared with real noise results from the monitoring stations. It also hasn't factored in the new routes that will become operational when the North Runway becomes operational or those new routes that are subject to the daa's Relevant Action. The report also assumes that night-time is continuous which has shown not to be the case. One also has to factor in the normal low ambient noise levels at these Natura sites when no aircraft are flying overhead. The change in noise levels can be significant.

Another important factor that needs to be considered is the potential change in dawn chorus due to the shifting of aircraft movements from 07:00-08:00 to 06:00-07:00, and what impact the increase in noise levels has on the birds due to higher energy expenditure on louder singing.

The assessment carried out cannot be relied upon to rule out negative impacts on the Natura sites in proximity to Dublin Airport.

5.0 INSULATION SCHEME

SUMMARY

- Insulation installed in houses already insulated by the daa fails to mitigate against adverse noise levels as outlined in the report from the MLM Group.
- Insulation Scheme proposed by ANCA **insulates less houses** than in the planning application by the daa. A large number of houses in Coolquay, The Ward, St Margarets and Kileek Lane have been removed.
- ANCA did not use the criteria 2 specification from the daa in their cost-effectiveness analysis. They only used criteria 1. The daa included all dwellings >55dB Lnight in 2025 for criteria 1 and all dwellings >50dB Lnight with a 9dB increase in 2022 Proposed compared with 2025 Permitted for criteria 2.
- Insulation Scheme only applies to the cohort deemed 'very significantly' affected. No mitigation for 'moderately' or 'significantly' affected dwellings.
- ANCA and the daa are proposing noise insulation as a mitigation measure to night-time noise increases within the St Margarets The Ward communities. This is contrary to Fingal County Council's advice within their own Development Plan, and testing carried out within the St Margarets The Ward area on housing that has already been insulated by the daa recently indicates the guidance referred to by Fingal County Council and the WHO cannot be achieved and will cause serious health issues of those affected by the proposed increase in night time noise.
- ProPG and WHO NNG Guidelines state an internal noise level of no more than 10-15 events > 45dB LAmax.
    - Based on N60 contours, 18,959 dwellings >= 10 events and 5,282 dwellings >=25 events for 2025 Proposed scenario. Mitigation for these dwellings is not taken into account. The cost-effectiveness analysis does not consider these large number of dwellings and so the application of the Balanced Approach is flawed.
- Conflicts with Fingal Development Plan as not all houses in Noise Zone B are being offered insulation,

- RFI #93 states that over-heating was not taken into account for insulation purposes. The response also does not take into account LAmax values as specified in the ProPG Guidelines and in BS8233:2014 section 7.7.2 note 4.
- No consultation with people potentially affected and requiring insulation.
- No medical expertise used in the analysis to determine the criteria for insulation.
- Large number of warehouses and offices in close proximity to Dublin Airport exposed to noise levels >60dB Lden and some exposed to levels >65dB Lden, potentially exceeding BS8233:2014 limits.

DAA PROPOSAL

Land Use Planning. Residential Sound Insulation Grant Scheme.

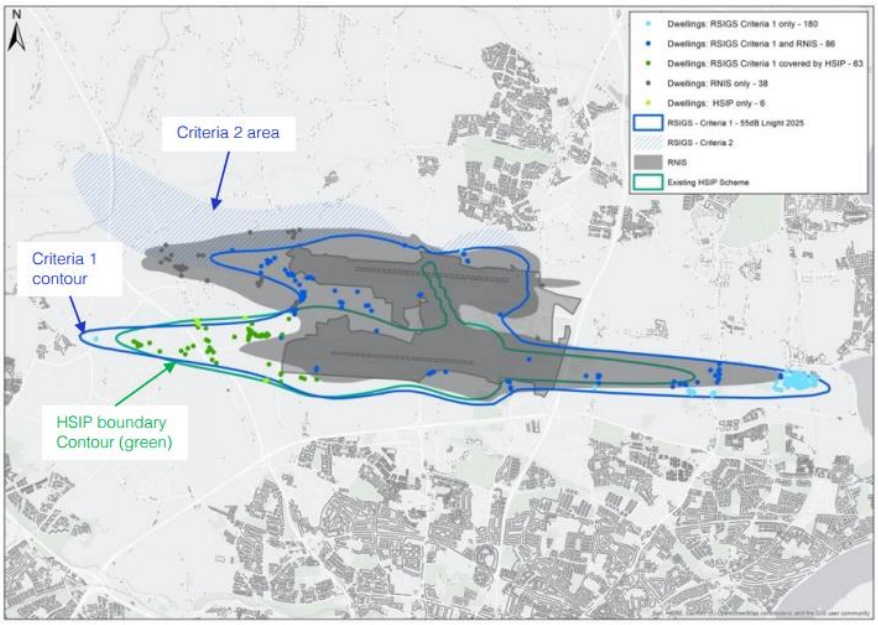
Minimising the potential for significant adverse effects arising from Scenario 2.

Dwellings are eligible for RSIGS if they are not eligible for insulation under the existing HSIP and RNIS schemes, and satisfy either of the following noise-based criteria:

- **Criteria 1:** Dwellings forecast to be exposed to "high" night-time noise levels in 2025 - at least 55dB L_{night} (dark blue contour line in figure); **OR**
- **Criteria 2**: Dwellings with a "very significant" rating arising from forecast noise levels of at least 50dB L_{night} and a change of at least +9dB in the first full year when the Relevant Action comes into operation when compared with the permitted operation in the same equivalent year (area indicated by blue hatched area in the figure).

Analysis indicates the following dimensions of the proposed RSIGS.

- **Criteria 1:** Approximately 335 dwellings in total are forecast to be exposed to noise levels greater than 55 dB L_{night}. Approximately 90 of these are already included as part of the RNIS (dark blue dots in the grey shaded area) and 63 as part of the HSIP (green contour and dots) which leaves approximately 180 dwellings eligible as a result of Criteria 1 only (bright blue dots).
- **Criteria 2:** Approximately 67 dwellings in total meet this criteria - located predominantly to the north-west of the airport blue hatched area). Of these, approximately 13 are already included as part of the RNIS (overlap of grey and blue hatched area) and none included in the HSIP. This leaves approximately 54 dwellings in the area identified for RSIGS criteria 2.



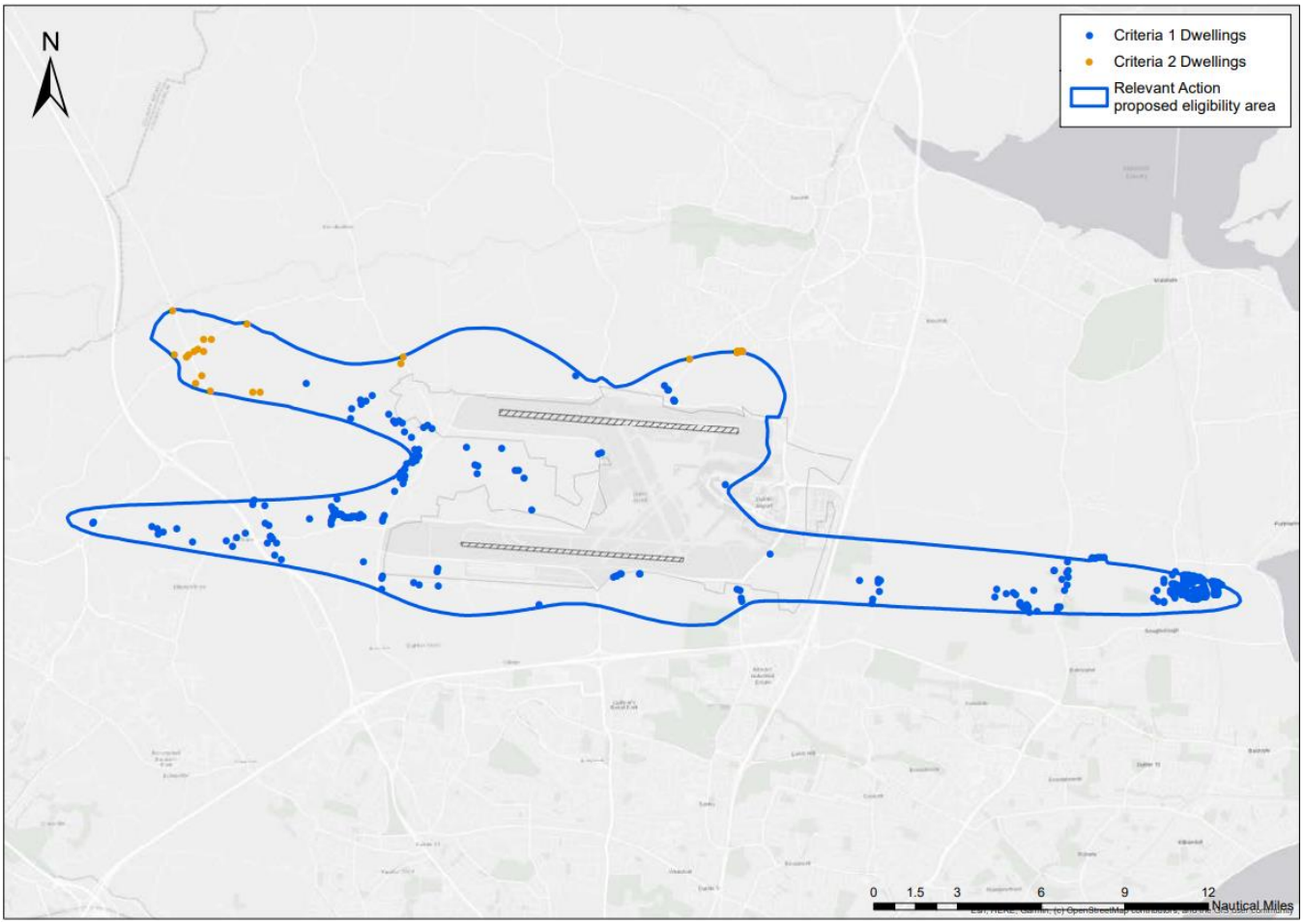
Dublin Airport Development of Proposed Noise Measures

For Criteria 1, there are 180 dwellings requiring insulation in the >55dB Lnight contour.

For Criteria 2, there are 54 dwellings requiring insulation based on >50dB Lnight and a +9dB change.

Arising from ANCA's draft decision the dwellings in Criteria 2 have changed. This is due to ANCA selecting 2025 as the reference year as opposed to 2022 used by the daa. As a result, the number of houses requiring insulation drops to circa 30 houses. The daa were intending to insulate 54 dwellings under criteria 2 but ANCA have reduced this to ~30.

APPENDIX L DRAFT REGULATORY DECISION



The choice of 2025 by ANCA for criteria 2 of the insulation scheme is a strange decision by ANCA. The intent of 'significance' with reference to an EIAR is to show the change before the development relevant to the change after development. It makes no sense to compare 2025 Proposed to 2025 Permitted. The residents will not be exposed to 2025 Permitted. That is a theoretical scenario. The significance should be related to when the development comes into operation. So, a comparison between real exposure levels to what is predicted when the development comes into force. Real exposure levels could be 2016, 2017, 2018, 2019, 2020 and 2021. It is assumed the North Runway will begin operations in 2022.

ANCA have chosen a baseline reference year of 2019 for their NAO yet have chosen 2025 Permitted as the comparison year. There is consistency in this logic.

2019 should not be used as the baseline reference year as highlighted in the accompanying documentation. 2016 is a more applicable year and the year used in the last Round of the END. And 2017 has been selected in the EU Commission's Action Plan 2021 "Towards zero pollution for air, water and soil".

The significance criteria should be the comparison of noise levels just before the North Runway opens and the anticipated noise levels for the first year after it opens. Because of the downturn in the aviation sector due to Covid, the current noise levels are well below what is to be expected for the population soon to be affected by the North Runway operations. The population affected are going to experience a significant increase in noise. Some of these residents may have experienced higher noise levels in 2018 and 2019 but have enjoyed a relative noise free environment for much of 2020 and 2021. Their noise exposure may increase in 2022 before the North Runway opens, but not to the levels of 2018 or 2019. They will experience a 'very significant' change in exposure when the North Runway opens and it's this significance that is important to their health and why it's a cornerstone of an EIAR. The population significantly affected by the change in noise levels should not be excluded solely based on a downturn in aviation due to Covid. Their health will be impacted by the sudden change in significance, and they need to be protected from such exposure. Protection of the population exposed to sudden rises in significant noise levels should be a fundamental duty of a Noise Regulator under EU598/2014. The Regulator cannot be excused of their duties by quoting Covid-19. 2018 and 2019 were the anomaly years as Fingal County Council recklessly allowed noise to spiral out of control.

ANCA have erred on their selection of 2025 as it fails the significance test. Comparison to a theoretical year of 2025 Permitted is meaningless. The significance test should be a comparison of what the exposure levels are just before and just after the North Runway opens.

PRE-PLANNING

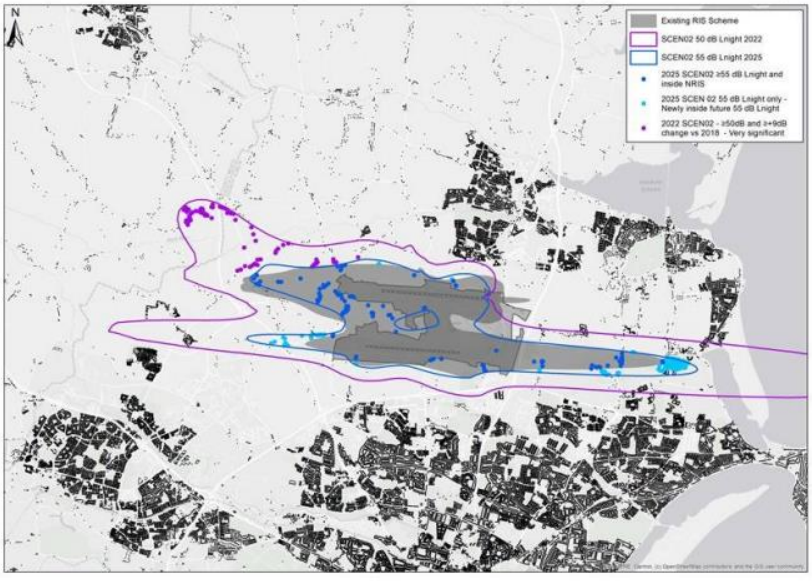
In a pre-planning presentation to Fingal County Council in November 2020, the daa presented details of their impending application. Included in the presentation are details of a new insulation scheme to take account of night-time noise.

- Grant scheme for sound insulation measures up to a value of €20,000 for dwellings:
  - Forecasted to be exposed to night-time noise levels of at least 55dB Lnight in **2025** or
  - Forecasted to be exposed to noise levels >50dB Lnight in **2022** arising from a change of at least 9 dB when compared with **2018**

The result was an intended 325 new dwellings to be insulated. For criteria 2, the daa were intending to insulate 83 dwellings >50dB Lnight in 2022 and have experienced a +9dB change relative to 2018. This is a far more appropriate comparison of when the North Runway opens compared to a real previous year.

Night Noise Insulation Grant Scheme

Based on exposure to noise levels >=55dB L_{night} 2025 or L_{night} >= 50dB (2022) and change >=+9dB
325 additional properties eligible noise insulation grant (over that currently covered by the NRIS).



	Dwellings
Total >=55dB Lnight 2025	360
Total >=50dB with +9dB change (2022 compared with 2018)	83
TOTAL DWELLINGS IN SCHEME	443
Dwellings already covered by existing NRIS	118
NEW DWELLINGS ELIGIBLE FOR NEW NIGHT NIS Grant	325

There are additional properties eligible under the current daytime scheme not included in these numbers = approx. 90 additional.

However, restricting to only those dwellings experiencing a +9dB change is a serious limitation of the scheme and not in line with EPA Guidelines on significance.

EIAR

The EIAR document presents table 13-3 to show the potential significance effect of absolute and relative changes in noise. Adding in the Lnight absolute and relative values shows the range of noise scenarios that cause significant effects.

Absolute Noise Level Rating Lnight	Change in Noise Level rating	0-0.9	1-1.9	2-2.9	3-5.9	6-8.9	>=9
< 40		Imperceptible	Imperceptible	Imperceptible	Not Significant	Slight	Moderate
40-44.9		Imperceptible	Imperceptible	Not Significant	Slight	Moderate	Significant
45-49.9		Imperceptible	Not Significant	Slight	Moderate	Significant	Significant
50-54.9		Not Significant	Slight	Moderate	Significant	Significant	Very Significant
55-59.9		Slight	Moderate	Significant	Significant	Very Significant	Profound
>=60		Moderate	Significant	Significant	Very Significant	Profound	Profund

Currently the daa are only proposing to insulate the dwellings shaded dark red (Very Significant and Profound effects). This is not acceptable and all dwellings in the light red shading (Significant effects) should be insulated.

For example, a dwelling in the 50-54.9 dB Lnight contour and which encountered a > 3 dB change should be insulated. Likewise, a dwelling in the 45-49.9 dB Lnight contour that experienced a > 6 dB increase in noise should also be insulated. And a dwelling in the 40-44.9 dB Lnight contour that experienced a noise increase >= 9 dB should also be insulated.

Article 1 of EU598/2014 states that the number of people 'significantly affected' by aircraft noise should be limited and reduced in accordance with the Balanced Approach. It does not state people 'very significantly' affected as proposed by the daa and ANCA.

Article 1

Subject matter, objectives and scope

1. This Regulation lays down, where a noise problem has been identified, rules on the process to be followed for the introduction of noise-related operating restrictions in a consistent manner on an airport-by-airport basis, so as to help improve the noise climate and to limit or reduce the number of people significantly affected by potentially harmful effects of aircraft noise, in accordance with the Balanced Approach.

In the UK Government's consultation document "Aviation 2050 The future of UK aviation" (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data

/file/769696/aviation-2050-print.pdf), it states that the Government is "*proposing new measures to improve noise insulation schemes for existing properties, particularly where noise exposure may increase in the short term or to mitigate against sleep disturbance*".

As a result, the Government proposes to extend the noise insulation beyond 63dB LAeq16 to 60dB LAeq16. Why haven't ANCA followed suit and what is ANCA's rationale for not doing so?

The Government also proposes to set a minimum threshold of 3dB LAeq for airspace changes leading to increased overflight which leave properties in the 54dB LAeq16 contour. So the UK Government acknowledges that a 3dB rise in noise levels warrants insulation.

3.121 The government is also:

- **proposing new measures to improve noise insulation schemes for existing properties, particularly where noise exposure may increase in the short term or to mitigate against sleep disturbance**

3.122 Such schemes, while imposing costs on the industry, are an important element in giving impacted communities a fair deal. The government therefore proposes the following noise insulation measures:

- **to extend the noise insulation policy threshold beyond the current 63dB LAeq 16hr contour to 60dB LAeq 16hr**
- **to require all airports to review the effectiveness of existing schemes. This should include how effective the insulation is and whether other factors (such as ventilation) need to be considered, and also whether levels of contributions are affecting take-up**
- **the government or ICCAN to issue new guidance to airports on best practice for noise insulation schemes, to improve consistency**
- **for airspace changes which lead to significantly increased overflight, to set a new minimum threshold of an increase of 3dB LAeq, which leaves a household in the 54dB LAeq 16hr contour or above as a new eligibility criterion for assistance with noise insulation**

Extending this to night-time movements, and following the 'significance' matrix above, all dwellings >50dB Lnight and experiencing a +3dB increase in noise should also be insulated. The criteria for changes in night-time noise requiring insulation should be:

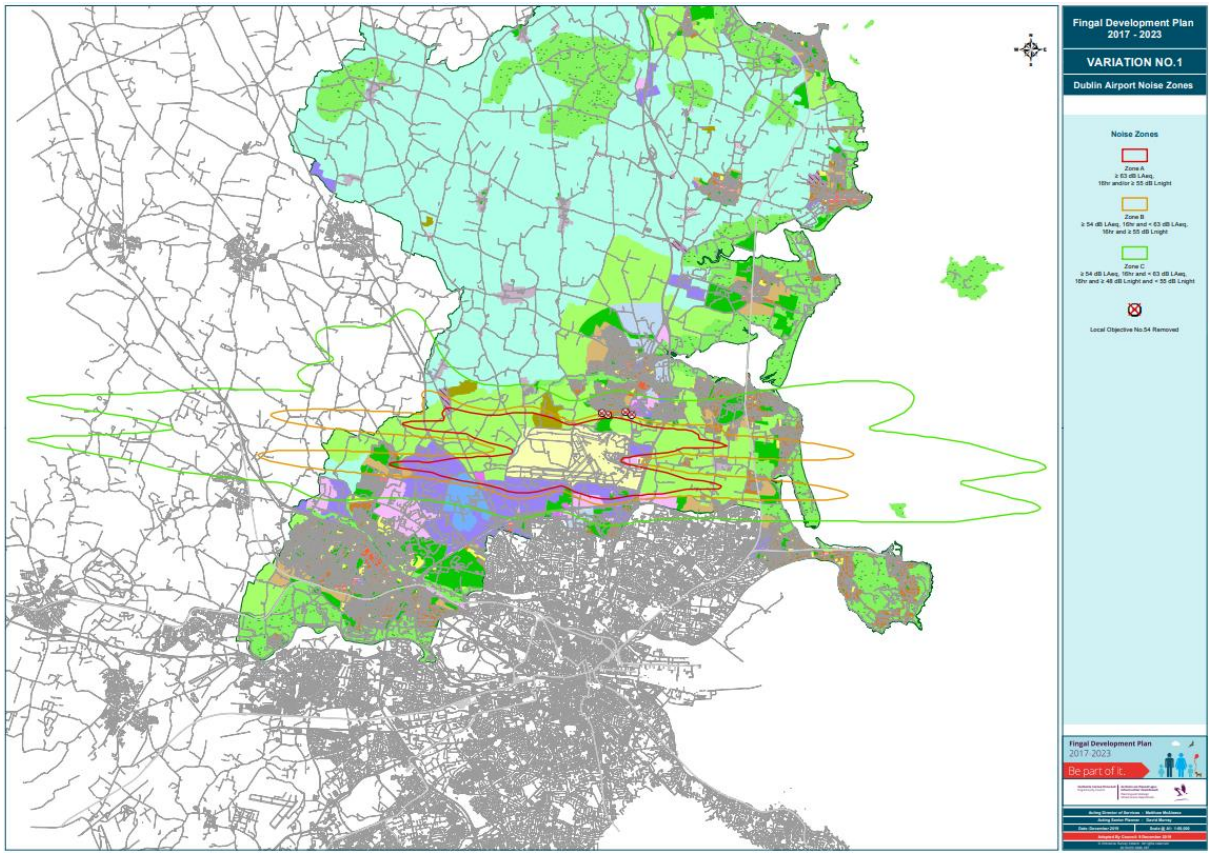
- >40dB and +9dB
- >45dB and +6dB
- >50dB and +3dB
- >55Db

FINGAL DEVELOPMENT PLAN

Variation number 1 of Fingal Development Plan 2017-2023:

https://www.fingal.ie/sites/default/files/2020-01/map-adopted_variation_no_1.pdf

Zone B accounts for areas exposed to noise levels >55dB Lnight but ANCA are not intending to insulate dwellings within Zone B, conflicting with the Development Plan.



The Development Plan Zones take account of the fact that the areas in Zone B will experience noise >55dB Lnight during certain periods of the year. The requirement for anyone building in Zone B is that "*Appropriate well-designed noise insulation measures **must** be incorporated into the development in order to meet relevant internal noise guidelines*".

It is therefore very apparent that the noise insulation scheme proposed by ANCA conflicts with the Fingal Development Plan and many dwellings from Zone B will be omitted from the insulation scheme, thus not meeting the relevant internal noise guidelines.

It is also worth noting that the EIAR has no receptors around the Ward Cross or under the new North Runway flight path.

6.0 NOISE MONITORING REPORTS

PROPG PLANNING GUIDELINES

The planning noise zones adopted by Fingal County Council in Variation number 1 of the Fingal Development Plan stipulate those applications for development in Zones A, B and C must carry out a noise assessment in accordance with the ProPG Planning Guidelines with respect to internal noise levels. The ProPG guidelines make use of LAmax as the key indicator for internal bedroom at night. Individual noise events should not exceed 45 dB LAmax more than 10 times a night. The guidelines also make reference to open windows and

"*where it is proposed that windows need to be closed to achieve the internal noise level guidelines, then full details of the proposed ventilation and thermal comfort arrangements must be provided*".

ACTIVITY	LOCATION	07:00 – 23:00 HRS	23:00 – 07:00 HRS
Resting	Living room	35 dB $L_{Aeq,16\,hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16\,hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16\,hr}$	30 dB $L_{Aeq,8\,hr}$ 45 dB L_{AmaxF} (Note 4)

NOTE 1 The Table provides recommended internal L_{Aeq} target levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources. Ground-borne noise is assessed separately and is not included as part of these targets, as human response to ground-borne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

NOTE 2 The internal L_{Aeq} target levels shown in the Table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the internal L_{Aeq} target levels recommended in the Table.

NOTE 3 These internal L_{Aeq} target levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve.

NOTE 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events (see Appendix A).

In Appendix A.10 the ProPG Guidelines make reference to the UK Government's Planning Practice Guidance and highlights the distinction between detectable impacts and adverse and significant adverse effects of noise on sleep.

- "Noise with the "potential for some reported sleep disturbance" is an "Observed Adverse Effect" that should be mitigated and reduced to a minimum; and
- Noise with the "potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep" is a "Significant Observed Adverse Effect" that should be avoided; and
- Noise that causes "regular sleep deprivation/awakening" is a "Significant Observed Adverse Effect" that should be prevented."

This focus on LAmax is also highlighted in the WHO Community Noise Guidelines 1999. It is therefore imperative that LAmax should be a critical assessment metric in the NAO.

The WHO Community Noise Guidelines 1999 are referenced in the BAP report titled "Dublin Airport Aircraft Noise Methodology Report" dated March 2020 and which was submitted to ANCA as part of their planning application to have the passenger numbers increased from 32m to 35m (F19A/0449).

In appendix A2.33 it states:

"*The 1999 WHO guidelines provide advice that for a good sleep**, indoor sound pressure levels should not exceed approximately 45 dB LAmax more than 10-15 times per night**. This guidance on internal noise levels remains current. Accounting for sleeping with a bedroom window slightly open (and a reduction from outside to inside of 15 dB), this translates to an outside sound pressure level of 60 dB LAmax*.".

The BAP report goes on further to explain how N60 contours can be used to show differences in scenarios for individual noise events:

"*N60 contours are therefore used in this assessment to illustrate how, for a given point on the ground, the number of aircraft events producing a level of 60 dB LAmax or more will change between various scenarios.*"

The WHO 2009 Night Noise Guidelines (NNG) makes reference to the Community Nosie Guidelines (1999):

"*If negative effects on sleep are to be avoided the equivalent sound pressure level should not exceed 30 dBA indoors for continuous noise. If the noise is not continuous, sleep disturbance correlates best with LAmax and effects have been observed at 45 dB or less. This is particularly true if the background level is low. Noise events exceeding 45 dBA should therefore be limited if possible. For sensitive people an even lower limit would be preferred. It should be noted that it should be possible to sleep with a bedroom window slightly open (a reduction from outside to inside of 15 dB). To prevent sleep disturbances, one should thus consider the equivalent sound pressure level and the number and level of sound events. Mitigation targeted to the first part of the night is believed to be effective for the ability to fall asleep*."

The NNG comments further:

"*New information has made more precise assessment of exposure-effect relationship. The thresholds are now known to be lower than LAmax of 45 dB for a number of effects. The last three sentences still stand: there are good reasons for people to sleep with their windows open, and to prevent sleep disturbances one should consider the equivalent sound pressure level and the number of sound events. The present guidelines allow responsible authorities and stakeholders to do this. Viewed in this way, the night noise guidelines for Europe are complementary to the 1999 guidelines. This means that the recommendations on government policy framework on noise management elaborated in the 1999 guidelines should be considered valid and relevant for the Member States to achieve the guideline values of this document*."

The executive summary makes reference to the interim target (IT) of 55 dB Lnight,outside and for its recommendation in the situations where the NNG of 40 dB Lnight, outside is not achievable in the short term. But the "***IT is not a health-based limit by itself. Vulnerable groups cannot be protected at this level***".

The 2009 NNG makes reference to a comparison of 'Inside' to 'Outside'. The assumption is that the insulation value of a house is 30 dB with windows closed and 15 dB with windows open. With windows open 50% of the time then the value is 18 dB. The guidelines present a figure of

21 dB as a conversion factor between outside and inside and this takes account that even well insulated houses may have their windows open a large part of the year.

Another very important feature of night-time noise events is the difference between the background noise levels and these single events. Background noise levels are lower at night and therefore harder to mask the individual aircraft noise events. The environs of the flight paths to the West of Dublin Airport are rural, lending itself to quiet night-time ambient noise levels and therefore the changes from ambient to high aircraft noise levels is of high significance. This change from low background noise to high noise levels is seen with the report from the MLM Group included in this submission.

NOISE REPORTS

The DAA provide biannual noise monitoring reports and publish them on their website (https://www.dublinairport.com/corporate/sustainability-and-community/noise/airport-noise-noise-reports).

The January-June 2020 report shows a significant decrease in aircraft movements from March to June due to the Covid-19 pandemic. Table 4 provides overflying altitudes at the various noise monitoring terminals (NMTs) comparing with the same period in 2019:

Table 4: Average overflying height

	Height [ft]									
	NMT1		NMT2		NMT5		NMT6		NMT20	
	A	D	A	D	A	D	A	D	A	D
2019	900	2,600	1,100	2,600	1,100	2,800	1,200	2,800	1,500	3,400
2020	1,000	2,800	1,000	3,000	1,100	3,000	1,300	3,200	1,600	3,600

NMT1 monitors runway 28 departures and runway 10 arrivals. It's located at the 'Bay Lane' and is approximately 6.5km from the start of the runway.

Table 4 shows that arrivals were on average 100 ft higher at NMT1 and departures 200 ft higher. This can be explained by lighter load factors due to the loss of passengers during the Covid-19 pandemic.

The July-December 2019 report shows the average overflying height compared with the same period in 2018:

Table 4: Average overflying height

	Height [ft]													
	NMT1		NMT2		NMT3		NMT4		NMT5		NMT6		NMT20	
	A	D	A	D	A	D	A	D	A	D	A	D	A	D
2018	900	2,600	1,000	2,600	900	2,500	1,100	2,900	1,100	2,700	1,200	3,100	1,500	3,400
2019	1,000	2,500	1,000	2,600	1,000	2,500	1,100	2,800	1,100	2,700	1,200	3,100	1,500	3,400

And the January to June 2019 report compares the same period with 2018:

Table 4: Average overflying height

	Height [ft]									
	NMT1		NMT2		NMT5		NMT6		NMT20	
	A	D	A	D	A	D	A	D	A	D
2018	900	2,600	1,000	2,600	1,100	2,800	1,100	3,100	1,500	3,400
2019	900	2,600	1,000	2,600	1,100	2,800	1,200	2,800	1,500	3,400

Using these average overflying heights, the data shows that arrivals normally overfly NMT1 at 900ft and departures at 2600ft. The data in the first half of 2020 shows that these heights have increased but that can be explained by the lower loads due to lower passenger numbers. The report states that in the first half of 2020 there was a decrease of 65% in passenger numbers compared to the same period in 2019. And Runway 28 handled 88% of all the movements in this period.

The report provides the LAmax distribution for NMT1 in figure 12:

Figure 12 shows the $L_{A,MAX}$ distribution, for aircraft noise, for the first half year of 2020 for NMT 1.

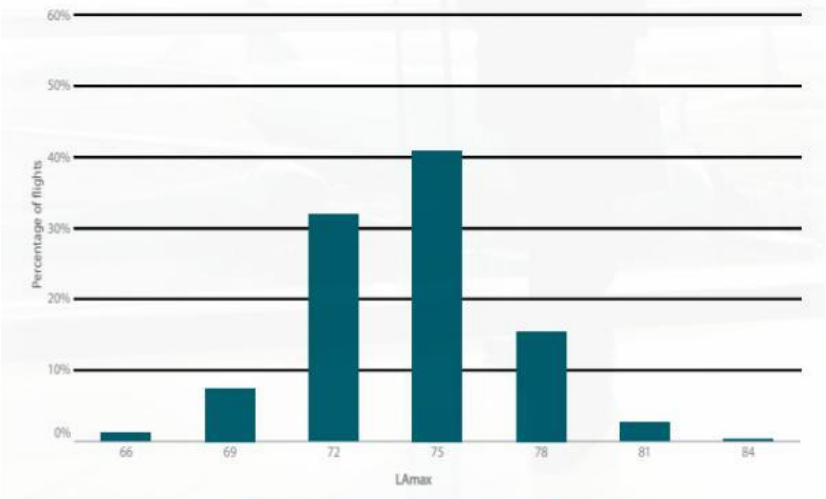


Figure 12: $L_{A,MAX}$ levels distribution for NMT 1, January - June 2020

Figure 12 shows that approximately 58% of aircraft movements detected at NMT1 had a LAmax value > 75 dB. Approximately 18% had a LAmax value > 78 dB and 2.5% > 81 dB.

Looking at the distribution of the LAmax values for the June-December 2019 time period, the percentage of events > 75 dB LAmax is approximately 68%. 26% are > 78 dB LAmax and 5% > 81 dB LAmax.

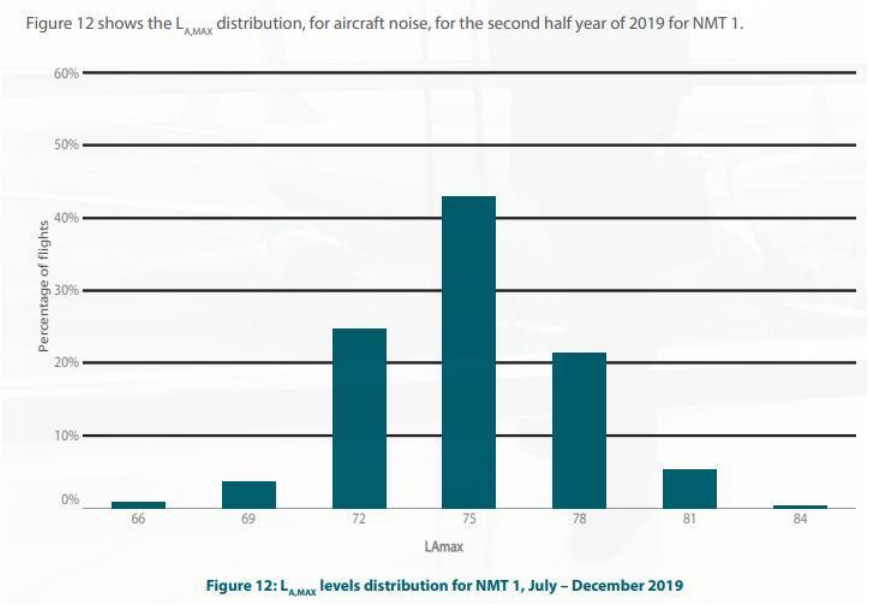


Figure 12: $L_{A,MAX}$ levels distribution for NMT 1, July – December 2019

The distribution for the first half of 2019 is similar. From these distributions and the lower heights of overflying aircraft one can deduce that the distribution for 2020 shows lower amount of LAmax events > 75 dB, which is below normal expected noise levels.

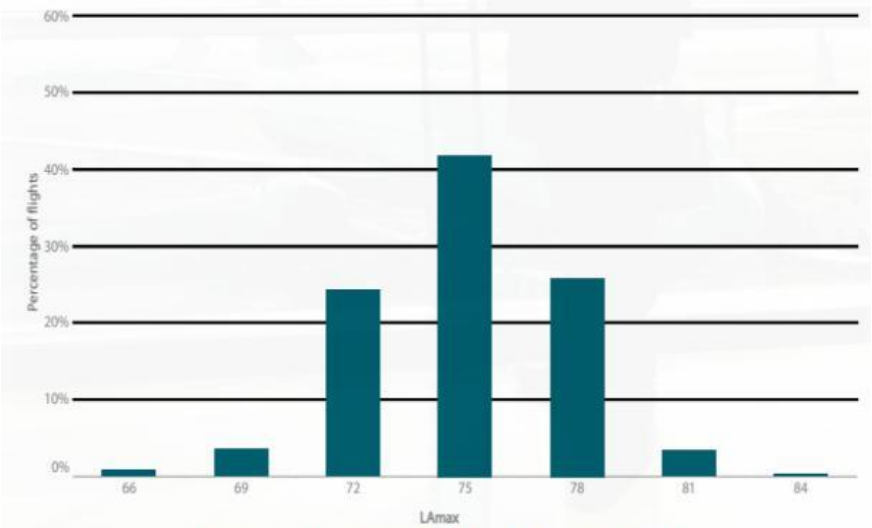
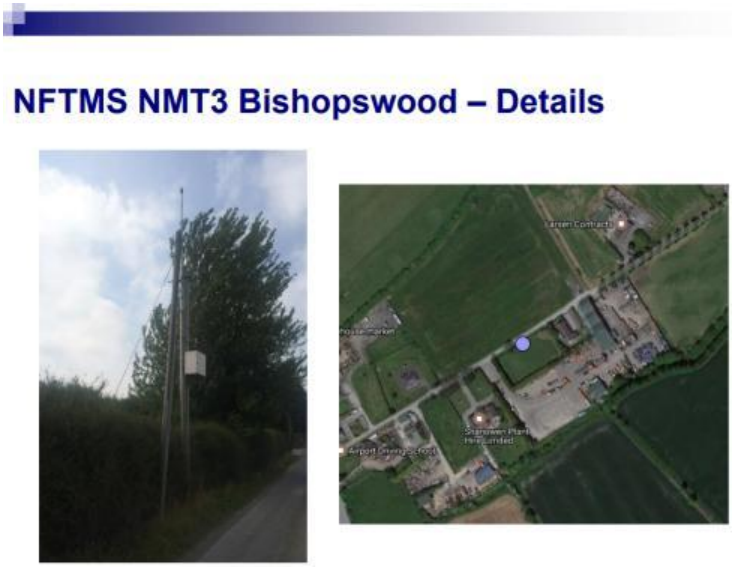


Figure 12: $L_{A,MAX}$ levels distribution for NMT 1, January – June 2019.
Updated in September 2020 (see section introduction and executive summary).

BAP PRESENTATION

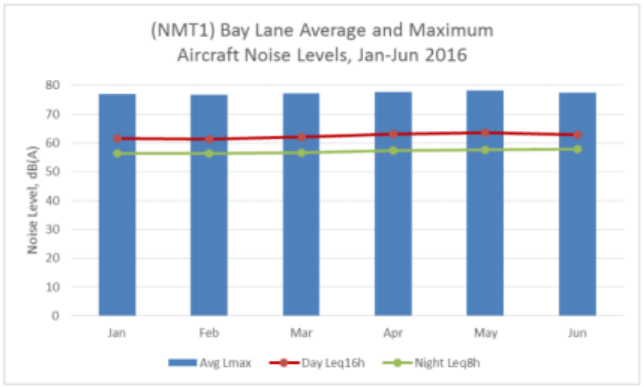
At a Community Liaison Group (CLG) meeting in April 2017 (https://www.dublinairport.com/docs/default-source/meeting-documentation/aircraft-noise-monitoring-datac4fa448b73386836b47fff0000600727.pdf?sfvrsn=8f6e160f_2), a presentation from BAP was given titled 'Aircraft Noise Monitoring Data from Noise Monitoring Terminals (NMTs)'. In this presentation BAP explain noise monitoring and metrics. The presentation also focused on NMT1 and NMT3 which are to the West of Dublin Airport.



Average LAmax at NMT1 from January-June 2016 was 77 dB:

Bickerdike Allen Partners
Architecture Acoustics Technology

NFTMS Average & Maximum Noise Levels



Average L_{eq} for 6-month period
Day 62.5 dB
Night 57.1 dB

Based on 42,566 aircraft noise events

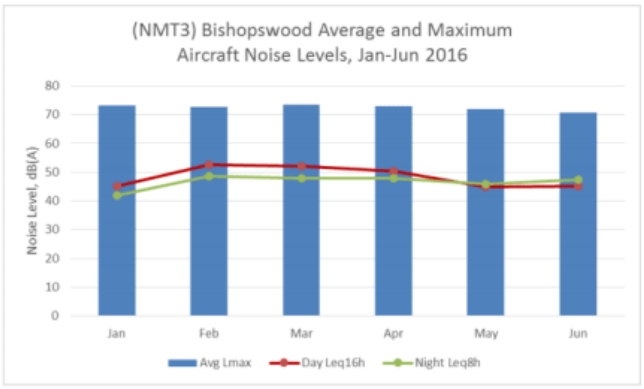
Avg L_{max} is the average of the maximum levels of all aircraft events recorded at the NMT in the month.

Average L_{max} for 6-month period is 77 dB
Day L_{eq} 5 dB higher than night on average

Average LAmax at NMT3 from January-June 2016 was 72 dB:

Bickerdike Allen Partners
Architecture Acoustics Technology

NFTMS Average & Maximum Noise Levels



Average L_{eq} for 6-month period
Day 49.6 dB
Night 47.0 dB

Based on 4,122 aircraft noise events

Avg L_{max} is the average of the maximum levels of all aircraft events recorded at the NMT in the month.

Average L_{max} for 6-month period is 72 dB
Day L_{eq} 3 dB higher than night on average

An important point to note is that there are many dwellings that are located closer to Dublin Airport than NMT1 which is 6.5km from the start of the South Runway. These dwellings are exposed to noise levels in excess of those at NMT1 as the aircraft are lower on departure and arrival, closer to the airport.

LAmax values for 2019 were requested via an AIE request to the DAA on August 12th, 2020, and the DAA responded with an Excel sheet on September 9th.

Data for July and September for NMT1 was analysed and the following statistics produced:

- July
  - 1208 Noise events in the night-time period 23:00-07:00
  - Average of 39 movements per night at NMT1
  - Max value of 93.1 dB LAmax
  - Min value of 66.7 dB LAmax
  - Mean value of 76.1 dB LAmax
  - 6.7% of movements > 80 dB LAmax
  - 56.5% between 75-80 dB LAmax
  - 35.3% between 70-75 dB LAmax
  - 1.6% between 65-70 dB LAmax
- September
  - 1101 Noise events in the night-time period 23:00-07:00
  - Average of 37 movements per night at NMT1
  - Max value of 106.7 dB LAmax
  - Min value of 66.4 dB LAmax
  - Mean value of 76.1 dB LAmax
  - 12.2% of movements > 80 dB LAmax
  - 52.0% between 75-80 dB LAmax
  - 34.7% between 70-75 dB LAmax
  - 1.2% between 65-70 dB LAmax

The data shows that during July and September 2019, over 37 movements per night were detected at NMT1 over the night-time period and over 63% of these movements were recorded at a value greater than **75 dB LAmax**, at a distance 6.5km from the start of the runway.

In the ProPG guidelines, appendix A2.33 states:

> "*The 1999 WHO guidelines provide advice that for a good sleep**, indoor sound pressure levels should not exceed approximately 45 dB LAmax more than 10-15 times per night**. This guidance on internal noise levels remains current. Accounting for sleeping with a bedroom window slightly open (and a reduction from outside to inside of 15 dB), this translates to an **outside sound pressure level of 60 dB LAmax***".

In table 13C-40 of the original EIAR's appendices, the existing population counts for the N60 metric are given for existing population count. N60 is the number of events above 60 dB LAmax per night-time period.

Table 13C-40: Existing Population Counts, N60 Metric

Metric Value, N60	Scenario and Existing Population Count						
	2018 Baseline	2019 Baseline	2022 Baseline	2022 Relevant Action	2025 Baseline	2025 Consented	2025 Relevant Action
≥ 10	69,613	75,967	42,926	59,891	42,864	65,906	61,018
≥ 25	24,638	26,835	15,370	11,879	15,020	7,958	11,739
≥ 50	80	7,402	35	67	32	29	191
≥ 100	0	0	0	0	0	0	0

The '2025 Relevant Action' scenario has 42% more people (61018 vs 42864) subjected to between 10-25 noise events compared with '2025 Baseline'.

Based on the ProPG Guidelines, 61018 people will not be able to sleep with their windows slightly open or risk having their sleep disturbed, with the '2025 Relevant Action' Scenario.

Comparing with Table 13C-56 in the revised EIAR, the number of people exposed to > 10 events above 60dB LAmax with 2025 Proposed is 56,517. It is worth noting that the number of people exposed to > 25 such events increased from 11,739 with 2025 Relevant Action to 16,277 with 2025 Proposed, highlighting the significance increase in people experiencing adverse noise levels between the two EIARs, which as not been explained by the daa or challenged by ANCA.

Table 13C-56: Existing Population Counts, N60 Metric

Metric Value, N60	Scenario and Existing Population Count						
	2018	2022 Permitted	2022 Proposed	2025 Permitted	2025 Proposed	2035 Permitted	2035 Proposed
≥ 10	69,613	41,432	46,401	44,908	56,517	27,353	29,801
≥ 25	24,638	296	8,820	15,333	16,277	12,452	12,981
≥ 50	80	0	67	16	110	16	98
≥ 100	0	0	0	0	0	0	0

Analysing the later April – June 2021 noise report (https://www.dublinairport.com/docs/default-source/corporate/dublin-noise-report-2021-q2.pdf?sfvrsn=4dc7d803_0), the height of aircraft at noise monitors NMT1, 2, 3 and 4 decreased compared with the same period in 2020. A decrease in aircraft height results in higher noise levels.

From the charts below it is evident that arriving aircraft are noisier at the noise monitors than departures. This has been reported in this submission based on LAmax values obtained from the daa by the CLG group, 'NMT 1 2 3 2016 2018 2019 Lmax events.xlsx' in Appendix E. This highlights the inadequacy of the proposed Noise Quota Count System as it assigns a smaller count to most aircraft types to arrivals compared with departures. It therefore is illogical to use the proposed Night Quota Count System at Dublin Airport as it rewards noisier arrivals over departures for those populations living under the flight path and who are most affected by aircraft noise.

Average monthly LAmax noise levels per NMTs are shown in Figure 6

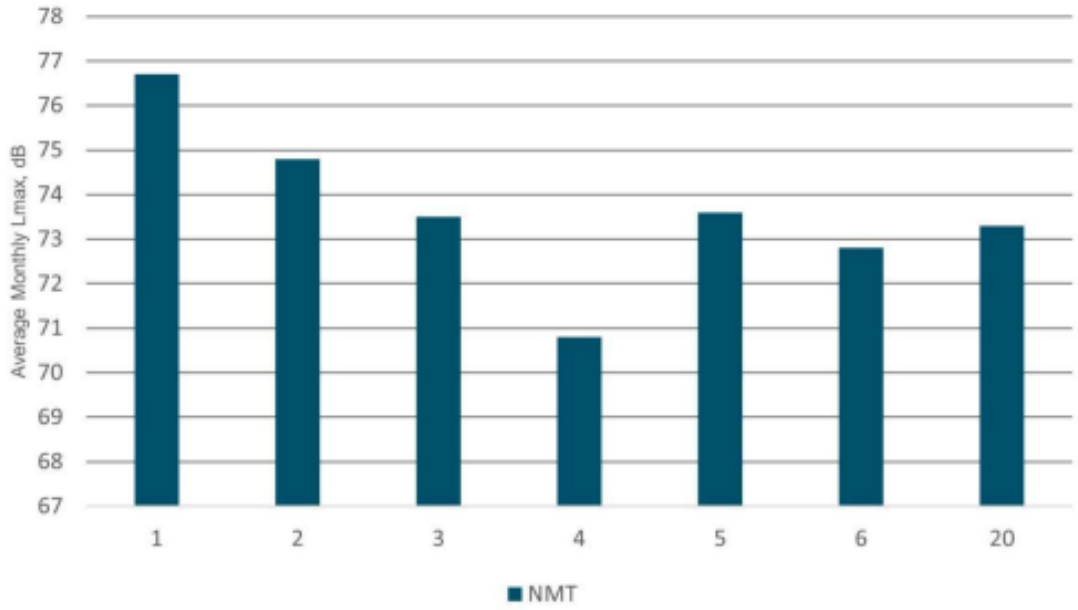


Figure 6: Average LAmax levels distribution for NMTs, April - June 2021

Average monthly LAmax noise levels per NMT for departing and arriving aircraft.

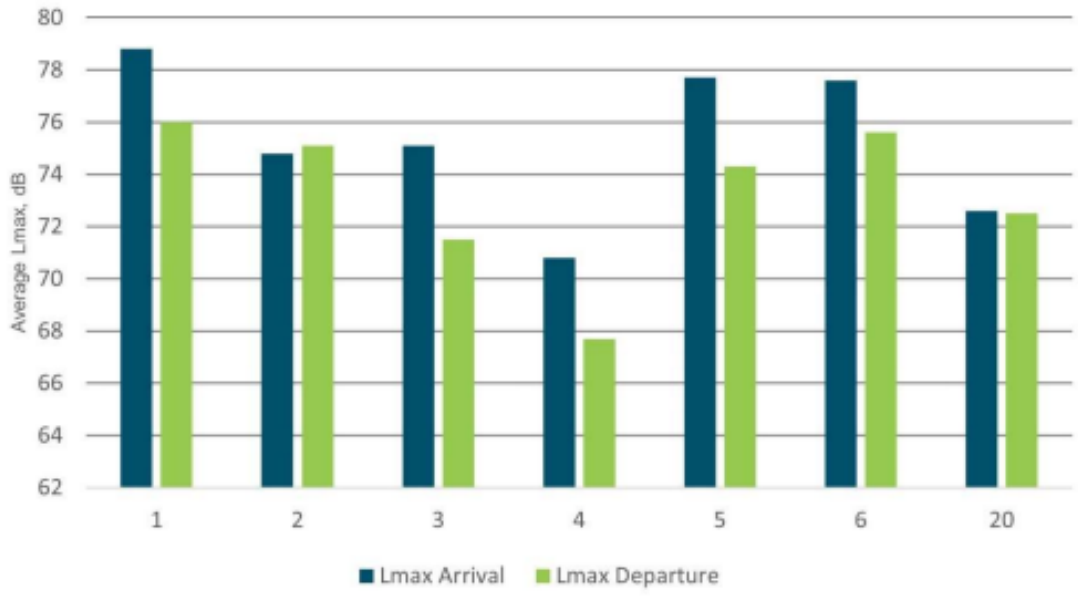


Figure 7: Average LAmax levels distribution for NMTs for arriving and departing aircraft, April - June 2021

From above the average LAmax at NMT1 for arrivals was 79dB and 76dB for departures

The LAmax distribution for April-June 2021 is given below.

Figure 23 shows the LAmax distribution for aircraft noise for the Second quarter of 2021 for NMT2.

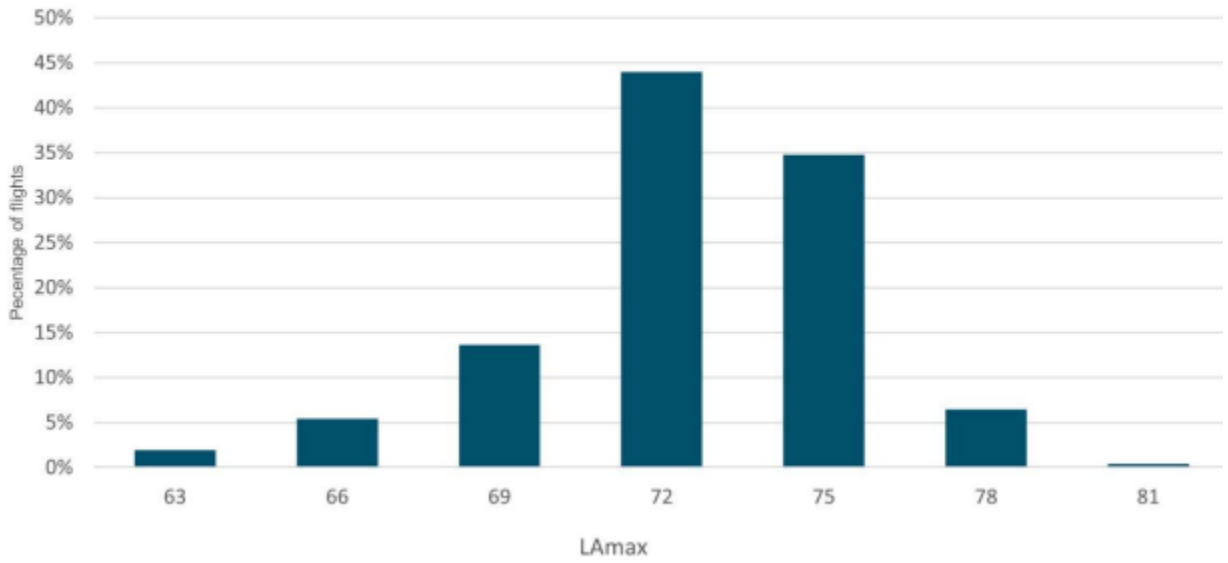
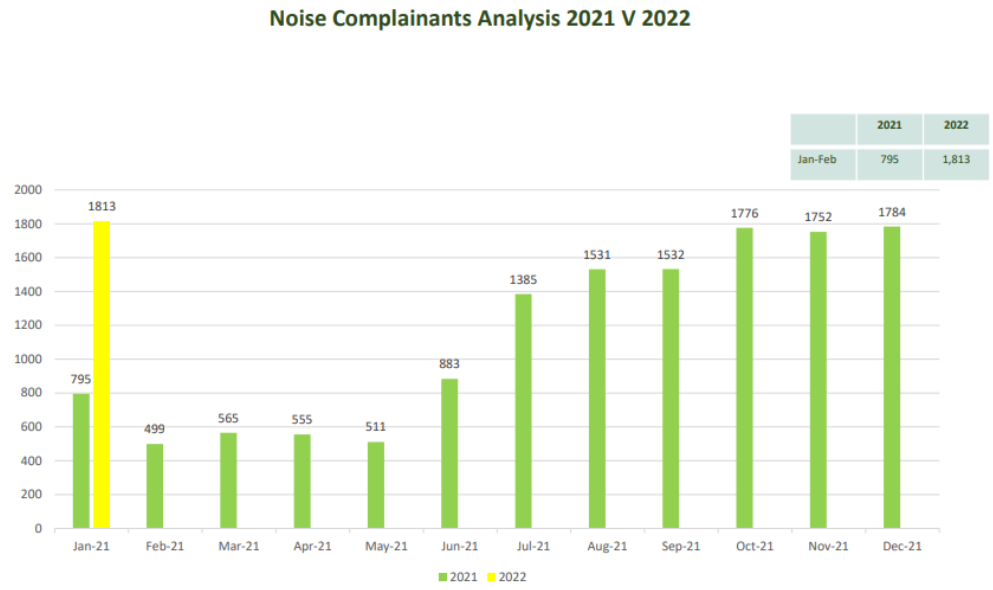


Figure 23: LAmax levels distribution for NMT 2, April - June 2021

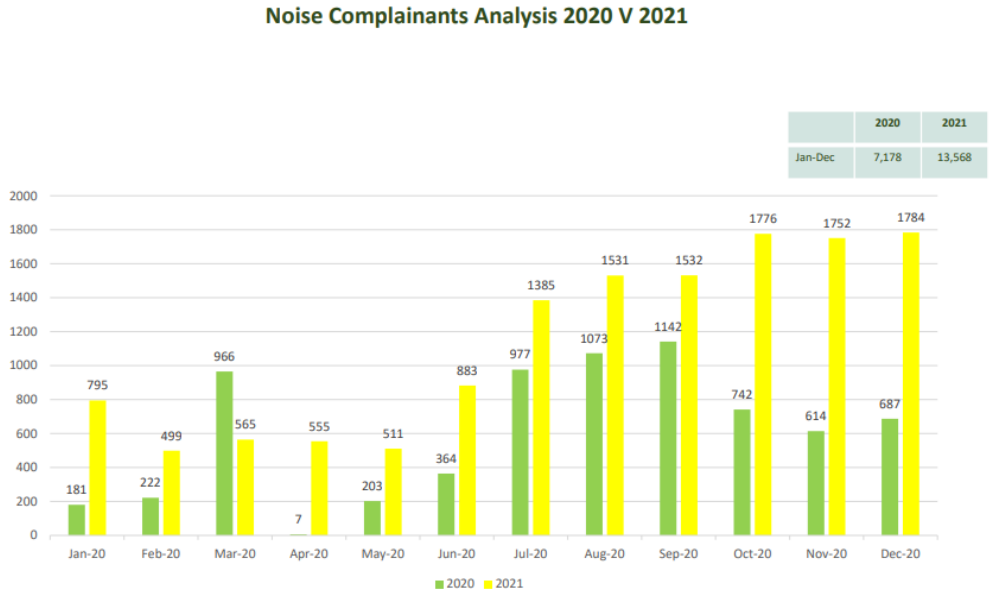
In ANCA's draft decision, they have not shown how they can protect the residents living closest to Dublin Airport when they are exposed to such high LAmax level exceeding the ProPG and WHO Guidelines. This is a serious omission from ANCA's analysis and highlights how they are failing in their duty to protect Public Health.

NOISE COMPLAINTS

The daa produce monthly Noise & Track Monitoring Reports. The latest report on their website is for January 2022 (https://www.dublinairport.com/docs/default-source/airport-noise/01-dublin-monthly-jan-2022.pdf). In January there were 1813 noise complaints. This is a significant increase on January 2021.



In the December 2021 report, it is clear to see the increase in noise complaints over the whole year.



There is no mention of noise complaints in ANCA's draft decision. How can the public have trust in the Noise Regulator if it fails to examine noise complaints? Why should the public complain if nothing is going to be done by the Regulator?

The Dublin Airport Noise Action Plan 2019-2023 identifies noise complaints as an action item:

8	Encourage daa to continue to operate noise complaint management systems and respond to all aviation-related noise complaints in a timely manner	Submission of progress report using target of 95% of aircraft noise complaints responded to within 28 days	Monitoring and community engagement through adequate response times to all aviation related noise complaints	Ongoing

The EPA in their 2020 Publication 'Ireland's Environment – An Integrated Assessment 2020' (https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/EPA_Irelands_Environment_2020.pdf) devoted a whole chapter to environmental noise. The report highlights the increasing number of noise complaints due to aircraft noise – 1453 in 2018.

Airport Noise: A Key Issue to Control When Passenger Numbers Increase Again

Dublin Airport welcomed 32.9 million passengers during 2019, setting a new record for traffic at the airport (Dublin Airport, 2020). Noise complaints around Dublin Airport have become a more significant issue in recent years, with the Dublin Airport Authority logging 1453 noise-related complaints in 2018 (Dublin Airport, 2019), although there has clearly been a major reduction in airport activities during the COVID-19 pandemic. The numbers of passengers using Cork (2.4 million passengers) and Shannon (1.85 million passengers) Airports had also increased in recent years, until the COVID-19 pandemic in 2020. However, both airports are currently below the threshold of 50,000 air movements per annum for noise mapping requirements. Over the last 3 years, according to the Dublin Airport Authority, there have been very few recorded noise complaints for Cork Airport and no noise complaints for Shannon Airport.

The report mentions the appointment of ANCA as Competent Authority. It states that the "*unit is responsible for ensuring that noise generated by aircraft activity at Dublin Airport is assessed in accordance with EU and Irish regulations*". Ignoring noise complaints and not taking on board public consultation is contrary to 2002/49/EC. Article 8(7) states that "*Member States shall ensure that the public is consulted about proposals for action plans, given early and effective opportunities to participate in the preparation and review of the action plans, that the results of that participation are taken into account and that the public is informed on the decisions taken. Reasonable time-frames shall be provided allowing sufficient time for each stage of public participation*".

> In 2019, Fingal County Council was appointed as the competent authority to regulate airport noise at Dublin Airport under EU Regulation No. 598/2014 (Government of Ireland, 2019), which covers noise-related operating restrictions at EU airports with more than 50,000 aircraft movements per year. The independent competent authority section within Fingal County Council is called the Airport Noise Competent Authority. This unit is responsible for ensuring that noise generated by aircraft activity at Dublin Airport is assessed in accordance with EU and Irish regulations. It ensures the application of the 'balanced approach' to aircraft noise management, as set out by the International Civil Aviation Organization (ICAO), in cases where a noise problem or potential noise problem is identified at the airport (ANCA, 2019).

It is imperative that ANCA monitor noise complaints. This is the only mechanism that residents have to voice their annoyance with aircraft movements.

7.0 QUOTA COUNT SYSTEM

QUOTA COUNT SYSTEM

The use of the Quota Count System put forward by the daa halves the quota count value for B38M movements compared with B738 movements. The certification levels may be different but the noise on the ground is the same. Therefore, the quota count values should not be half/double. They should be comparable. The certification of aircraft is governed by EU598/2014 but the assignment of count values is not and can be designed on a case-by-case basis. It is very apparent that the UK approach of assigning quota count values is not appropriate to real noise levels on the ground in the environs of Dublin Airport.

Nmt #1	Num Arr	LAmax Arr	QC Arr	Num Dep	LAmax Dep	QC Dep
A320	4669	79.32	0.25	20075	74.65	0.5
A21N	125	78.50	0.25	496	73.81	0.5
A20N	157	77.57	0.125	630	72.93	0.25
B738	6959	79.61	0.5	30553	76.55	0.5
B38M	32	78.82	0.25	162	75.00	0.25

Nmt #2	Num Arr	LAmax Arr	QC Arr	Num Dep	LAmax Dep	QC Dep
A320	22702	75.59	0.25	5720	73.62	0.5
A21N	496	73.78	0.25	112	72.65	0.5
A20N	768	72.81	0.125	214	71.73	0.25
B738	34785	75.76	0.5	8686	75.74	0.5
B38M	152	73.98	0.25	17	74.96	0.25

Nmt #3	Num Arr	LAmax Arr	QC Arr	Num Dep	LAmax Dep	QC Dep
A320	183	72.24	0.25	2697	71.24	0.5
A21N	5	70.38	0.25	56	70.98	0.5
A20N	12	72.17	0.125	57	73.78	0.25
B738	194	72.36	0.5	14813	70.44	0.5
B38M	0		0.25	20	76.08	0.25

Nmt	LAmax Arr	LAmax Dep	LAmax Both
Nmt #1	78.94	75.90	76.52
Nmt #2	75.08	74.96	75.06
Nmt #3	72.30	71.13	71.16

Looking at the tables above it's clear that arrivals are far noisier at the noise monitors than departures. Yet the QC value for departures is twice those of arrivals. Why are the noisier arrivals given a lower QC value?

Less than 2dB between the A320 and A20N. The A20N averaged 77.57dB LAmax on arrival at nmt #1.

Less than 1dB between the B738 and B38M for arrivals on nmt #1. The B38M still recorded an average arrival noise level of 78.82dB LAmax.

Less than 2dB between the A320 and A2ON and 1.55dB between the B738 and B38M for departures on nmt #1.

QC values have no consistency or relevance to what is being measured on the ground and how those most affected by noise are measured by a QC system.

The certified EPNdB values are not subject to change as per EU598/2014. However, the assigned QC values per EPNdB can be modified. Using a multiplier of 2 for each category of EPNdB is not appropriate for use at Dublin Airport. It is worth stating that the ICAO do not provide guidance on the use of Noise Quota Systems and the quota count values assigned to certification bands. The ICAO certification relates to the EPNdB levels only. The quota count system was first introduced in the UK and they rationale for doubling/halving the quota count values for each 3dB band was based on the fact that noise power doubles every 3dB. However, a more realistic approach should use the perceived doubling of noise by the human ear which is every 9dB. The quota count system as it currently stands can reward an aircraft that reduces its noise certification level from, say, 87 EPNdB to 86.9 EPNdB by halving its quota count value. A 0.1 EPNdB reduction can equate to a reduction from 0.5 to 0.25 in quota count terms.

The proponents of Quota Count Systems state that the reduction in 3dB of noise power means 2 aircraft of 3dB less equates to the 1 noisier aircraft. That may be true from a noise power point of view but it's rare that 2 aircraft fly at the same time. 2 aircraft movements will mean 2 noise events to local residents in sequential order. It does not mean 2 parallel noise events.

The real measured data shows that a QC system such as the one proposed by the daa and ANCA is not fit for purpose and should not be deployed at Dublin Airport.

The data also casts a doubt on ANCA and its consultant's ability to properly interrogate the data and come up with independent analysis. ANCA has accepted the QC totals from the daa and only suggested to use an 8-hour count rather than a 6.5-hour count. However, the daa just simply increased the value from 7990 to 16260 and ANCA duly obliged and accepted it.

Table 3.2: Noise classifications and Quota Count in use by the UK Department of Transport (October 2021)

Noise Classification	Quota Count
Below 81 EPNdB	0
81 – 83.9 EPNdB	0.125
84 – 86.9 EPNdB	0.25
87 – 89.9 EPNdB	0.5
90 – 92.9 EPNdB	1
93 – 95.9 EPNdB	2
96 – 98.9 EPNdB	4
99 – 101.9 EPNdB	8
Greater than 101.9 EPNdB	16

Forecasts QC reference table

Aircraft code	Est QC Arrival	Est QC Departure
223	0.125	0.25
318	0.25	0.25
319	0.25	0.5
320	0.25	0.5
321	0.25	1
332	0.5	2
333	0.5	2
339	0.5	1
359	0.5	0.5
738	0.5	0.5
739	0.5	1
781	0.25	1
788	0.25	0.5
789	0.25	0.5
32A	0.25	0.5
32N	0.125	0.25
32Q	0.25	0.5

Aircraft code	Est QC Arrival	Est QC Departure
33F	0.5	2
738F	0.5	0.5
73H	0.5	0.5
73P	1	1
73W	0.5	0.5
75W	1	1
76F	2	2
76V	1	2
77L	1	2
77W	1	2
7M2	0.25	0.25
7M8	0.25	0.25

Aircraft code	Est QC Arrival	Est QC Departure
ABY	1	2
AT4	0.5	0.125
AT7	0.25	0.25
CNT	0	0
CS3	0.125	0.25
DH4	0.25	0
E70	0.25	0.5
E75	0.25	0.5
E90	0.125	0.5
E92	0.125	0.5
E95	0.125	0.5
ER4	0.125	0.125
GS5	0.125	0.25
Q84	0	0.25
SF3	0.25	0.25

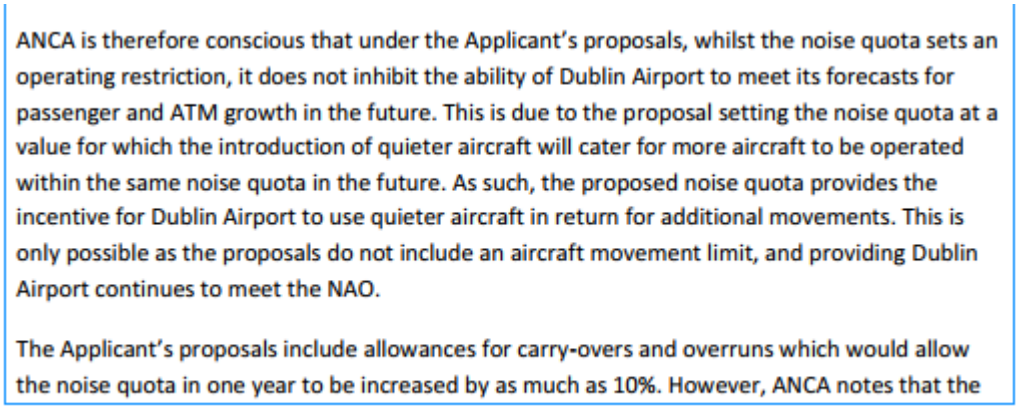
The Quota Count System in the draft decision does not stop one single flight from the daa's forecasts at night. In fact, it does the opposite and allows unmitigated flights. How can this be a Balanced Approach?

It is also worth referring to the submission to ANCA (FIN-C338-ANCA-177) from Dr King from NUI Galway. In his conclusions, Dr King makes the following points:

- The proposed Quota system is an incomplete interpretation of that operated in the London airports. The London airports operate a Noise Quota System together with a movement limit. If the Dublin approach is based upon the London Stansted approach, then it should also include a movement limit.
- The use of a quota system based on EPNL fails to account for noise events. A movement limit in parallel with the noise quota would go some way to address this issue.
- If there is no movement limit, any aircraft movement with a quota count value of zero would in effect be unlimited, despite the fact that it is a noise generating movement. The total of 16,260 QC points far exceeds the totals in Gatwick, Heathrow, and Stansted. It should be reduced significantly. A reduction in this limit would go some way in to meet that stated objective of limiting and reducing the long-term adverse effects of aircraft noise on health and quality of life.
- The total of 16,260 was based on a goal of reducing the average fleet noise per movement. This does not necessarily lead to a decrease in overall noise levels. For 2022, 2023 and 2025, the average fleet noise per movement decreases, but the overall QC points increase each year. A more appropriate approach would be to deliver a reduction of QC instead.
- In this authors opinion a target QC of 14,000 in parallel with a movement limit would represent a more progressive approach. These should be considered minimal targets and I encourage ANCA to consider lower limits. The QC target of 14,000 is based on a slight improvement of 2018 data. An appropriate movement limit would also need to be determined. By analyzing the average relationship between the Movement/Noise Quota Limits described in the London airports, a movement limit of 21,000 would appear in line with international practice. Similar to the London schemes, these limits could be revised to account for summer/winter variation.
- The above limits are based on 2018 data, as 2018 is the year identified by the DAA in the development of the target QC/ATM. However, the data suggest the limits would also be applicable to 2017, which might be more appropriate to set as a pseudo baseline year against which improvements are assessed. This would align with the timing of EU

Directive 2002/49/EC as well the European Commission's 'Towards Zero Pollution for Air, Water and Soil' Action Plan.

Attention is also drawn to comments in ANCA's report 'DRD Report 11 November 2021.pdf', where ANCA state that the Noise Quota Count System proposed "**does not inhibit the ability of Dublin Airport to meet its forecasts for passenger and ATM growth in the future**".



ANCA is therefore conscious that under the Applicant's proposals, whilst the noise quota sets an operating restriction, it does not inhibit the ability of Dublin Airport to meet its forecasts for passenger and ATM growth in the future. This is due to the proposal setting the noise quota at a value for which the introduction of quieter aircraft will cater for more aircraft to be operated within the same noise quota in the future. As such, the proposed noise quota provides the incentive for Dublin Airport to use quieter aircraft in return for additional movements. This is only possible as the proposals do not include an aircraft movement limit, and providing Dublin Airport continues to meet the NAO.

The Applicant's proposals include allowances for carry-overs and overruns which would allow the noise quota in one year to be increased by as much as 10%. However, ANCA notes that the

In section 1.6.2.2 of the Cost Effectiveness Methodology and Results report (Appendix J) it states:

"The Applicant's modelling shows that the annual night quota count (i.e. over the period 23:00 to 06:59) will be highest in 2025, at 15,892. This suggests that the 8-hour alternative noise quota limit of 16,260 as suggested by ANCA can be met without imposing any restrictions on how an airline may wish to operate from the airport subject to more restrictive restrictions on aircraft QC from 2030 onwards."

The report also lists the zero impact the Noise Quota Count System has on HSD and night-time noise priority figures:

Table J22: Reduction in people impacted in 2025 under different measures

Measure	Number of people no longer impacted compared with FWNM		Number of people impacted following measure	
	HSD	Night-time noise priority	HSD	Night-time noise priority
Permitted Operations	-14,083	-16	22,481	0
The Applicant's Proposed Noise Quota Scheme	0	0	36,564	16
Alternative Noise Quota Scheme	0	0	36,564	16
Most effective measure under HSD metric	-2,022	-16	34,542	0
Most cost-effective measure	-219	-16	36,345	0
The Applicant's preferred measure	442	-16	37,006	0

[15] Note that it was not possible to derive effectiveness measure Permitted Operations Scenario for Significantly Adversely Affected people due to data not being available.

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The Quota Count System is simply a marketing ploy by the daa that has been accepted by ANCA. ANCA's own analysis shows that the Noise Quota System does not impact on the daa's plans nor does it introduce any cost as no flights will be reduced. This is farcical implementation of the Balanced Approach and shows categorically that there is no 'Balance' applied by ANCA.

8.0 HSE SUBMISSION

SUMMARY

- The net effect of the revised EIAR is a worsening of the health impacts outlined by the HSE in their original submission to the Planning Authority. A 17.2% increase in the number of people highly annoyed and an increase of 51.6% in people highly sleep disturbed. The residual effects of the 2025 Proposed scenario (without restrictions) compared with the 2025 Permitted scenario (with restrictions) are a net significant adverse effect for 10474 people in terms of the Lnight metric.
- ANCA did not take into account the submissions to the Planning Authority and thus excluded the HSE's submission.
- The HSE concludes that:
    - All efforts should be made by the DAA to ensure as many people as possible are protected from the adverse health effects associated with aircraft noise as outlined above in this report. This must include reducing aircraft noise levels to below 45 dB Lden, and for night noise exposure to below 40 dB Lnight".
    - "The EHS is of the opinion that The World Health Organisation's Environmental Noise Guidelines of 45 dB Lden and 40 dB Lnight should have been used for ground noise assessments".

SUBMISSION TO PLANNING AUTHORITY

The HSE Environmental Health section made a submission, 'HES.pdf' in Appendix E, dated 28/01/2021 on planning application F20A/0668 by the daa regarding the removal of night-time flight restrictions at Dublin Airport.

Since the initial application by the daa, there has been a revised application submitted by the daa which incorporated a revised EIAR. The HSE EHS did not make a formal submission on this revised application. In parallel with the Planning Authority, the Aircraft Noise Competent Authority (ANCA) initiated their process in relation to the Aircraft Noise Bill. The planning application is on hold until ANCA adjudicate on noise. This is a separate statutory process to the Planning Authority and ANCA have not considered any of the submissions made to the Planning process. In effect, the HSE submission will not form part of ANCA's process unless it is resubmitted to ANCA. ANCA have made a draft decision on noise and published a draft Noise Abatement Objective (NAO) and published a draft Regulatory decision on the daa's application. This draft decision did not take the HSE's submission into account. ANCA may not be legally obliged to consider submissions to the Planning Authority, but it certainly does not meet the spirit of public consultation. ANCA must provide justification for refusing to take submissions to the Planning Authority into account.

Note:

In the HSE's submission the figures for 2025 quoted were the figures for 2025 Baseline and not 2025 Relevant Action. 2025 Baseline is the scenario if the restrictions stay in place. 2025 Relevant Action is the scenario with the restrictions removed and what the daa were applying for.

LDEN

In the first part of the submission, reference is made to the WHO's 45 dB Lden strong recommendation.

It states that 110234 people were Highly Annoyed (HA) in 2018, rising to 115740 in 2019. And the number of people exposed to >65 dB Lden increased from 251 to 285.

Figures for 2022 Baseline and 2025 Baseline are provided showing the drop in HA figures to 65227 and 63316 and for > 65dB Lden, the figures reduced to 133 and 128.

The submission concludes:

"***While the EHS welcomes the significant reduction in the people exposed to airline noise between the 2018/2019 baseline and the 2022/2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 63316 people assessed as highly annoyed and 128 people exposed to at least a high noise level based on the 2025 baseline scenario, will still be exposed to airline noise above the WHO recommendation of 45Lden.***"

The 2022 and 2025 Baseline scenarios are the situation if the planning restrictions are not amended. These are the forecasts if the original 2007 planning conditions are left intact. The HSE EHS rightly acknowledges that there are 63316 people assessed as being highly annoyed using the WHO's submission exposure curves.

However, the submission failed to list the population figures for the 2022 and 2025 Relevant Action scenarios. The 'Relevant Action' is the amending of the operating restrictions which leads to a large increase in the population highly annoyed compared to the status quo or Baseline scenarios.

Table 13-29 in the original EIAR lists the HA values for 2022 Baseline compared to 2022 Relevant Action.

Below the table it states:

"*Comparing the 2022 Relevant Action scenario with the 2022 Baseline, the number of people exposed to aircraft noise is forecast to increase, for all contour levels. The number of people assessed as highly annoyed by aircraft noise* ***increases by 6% from 65,227 to 69,428****. The*

number of people exposed to at least a high level of noise (i.e. 65 dB Lden or above) ***increases from 133 to 227*** *excluding consented developments."*

Therefore, the number of people highly annoyed in 2022 would be **69428** and the number exposed to >65 dB Lden would be **227** assuming the daa's Relevant Action application was granted.

Table 13-29: Number of people highly annoyed – 2022 Relevant Action vs Baseline Scenarios

Scenario	No. People Highly Annoyed	
	Excluding Consented Developments	Including Consented Developments
2022 Relevant Action	69,428	78,534
2018 Baseline	110,234	120,201
2022 Baseline	65,227	74,321
2025 Consented	125,742	136,170

Comparing the 2022 Relevant Action scenario with the 2018 Baseline, the number of people exposed to aircraft noise is forecast to reduce, for all contour levels except 70 dB L_{den}, which increases from 25 to 32 people. Consequently the number of people assessed as highly annoyed by aircraft noise also decreases, specifically by

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37% from 110,234 to 69,428. The number of people exposed to at least a high level of noise (i.e. 65 dB L_{den} or above) decreases from 251 to 227 excluding consented developments.

Comparing the 2022 Relevant Action scenario with the 2022 Baseline, the number of people exposed to aircraft noise is forecast to increase, for all contour levels. The number of people assessed as highly annoyed by aircraft noise increases by 6% from 65,227 to 69,428. The number of people exposed to at least a high level of noise (i.e. 65 dB L_{den} or above) increases from 133 to 227 excluding consented developments.

Table 13-43 compares people highly annoyed between 2025 Relevant Action and Baseline scenarios.

Below the table it states:

"*Comparing the 2025 Relevant Action scenario with the 2025 Baseline, the number of people exposed to aircraft noise is forecast to increase for all contour levels. The number of people*

assessed as highly annoyed by aircraft noise ***increases by 7% from 63,316 to 67,760****. The number of people exposed to at least a high level of noise (i.e. 65 dB Lden or above****) increases from 128 to 218****, excluding consented developments."*

Therefore, the number of people highly annoyed in 2025 would be **67760** and the number exposed to >65 dB Lden would be **218** assuming the daa's Relevant Action application was granted.

Table 13-43: Number of people highly annoyed – 2025 Relevant Action vs Baseline Scenarios

Scenario	No. People Highly Annoyed	
	Excluding Consented Developments	Including Consented Developments
2025 Relevant Action	67,760	76,809
2018 Baseline	110,234	120,201
2025 Baseline	63,316	72,337
2025 Consented	125,742	136,170

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Comparing the 2025 Relevant Action scenario with the 2018 Baseline, the number of people exposed to aircraft noise is forecast to reduce at lower contour levels but increase at higher contour levels. Overall the number of people assessed as highly annoyed by aircraft noise decreases by 39% from 110,234 to 67,760. The number of people exposed to at least a high level of noise (i.e. 65 dB L_{den} or above) decreases from 251 to 218 excluding consented developments.

Comparing the 2025 Relevant Action scenario with the 2025 Baseline, the number of people exposed to aircraft noise is forecast to increase for all contour levels. The number of people assessed as highly annoyed by aircraft noise increases by 7% from 63,316 to 67,760. The number of people exposed to at least a high level of noise (i.e. 65 dB L_{den} or above) increases from 128 to 218, excluding consented developments.

LNIGHT

In the next first part of the submission, reference is made to the WHO's 40 dB Lnight strong recommendation.

It states that 42260 people were Highly Sleep Disturbed (HSD) in 2018, rising to 47044 in 2019. And the number of people exposed to >55 dB Lnight increased from 753 to 1533.

Figures for 2022 Baseline and 2025 Baseline are provided showing the drop in HSD figures to 19690 and 19464 and for > 55dB Lnight, the figures reduced to 284 and 281.

The submission concludes:

"***While the EHS welcomes the significant reduction in the people exposed to airline noise between the 2018/2019 baseline and the 2022/2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 19464 people assessed as highly sleep disturbed and 281 people exposed to at least a high noise level based on the 2025 baseline scenario, will still be exposed to airline noise above the WHO recommendation of 40Lnight.***"

The 2022 and 2025 Baseline scenarios are the situation if the planning restrictions are not amended. These are the forecasts if the original 2007 planning conditions are left intact. The HSE EHS rightly acknowledges that there are ***19464*** people assessed as being highly sleep disturbed using the WHO's submission exposure curves.

However, the submission failed to list the population figures for the 2022 and 2025 Relevant Action scenarios. The 'Relevant Action' is the amending of the operating restrictions which leads to a large increase in the population highly annoyed compared to the status quo or Baseline scenarios.

Table 13-36 in the original EIAR lists the HA values for 2022 Baseline compared to 2022 Relevant Action.

Below the table it states:

"*Comparing the 2022 Relevant Action scenario with the 2022 Baseline, the number of people exposed to aircraft noise is forecast to increase, for all contour levels. Consequently, the number of people assessed as highly sleep disturbed by aircraft noise also* ***increases,***

specifically by 24% from 19,690 to 24,355*. The number of people exposed to at least a high level of noise (i.e. 55 dB Lnight or above)* ***increases from 284 to 1,152*** *excluding consented developments."*

Therefore, the number of people highly sleep disturbed in 2022 would be **24355** and the number exposed to >55 dB Lnight would be **1152** assuming the daa's Relevant Action application was granted.

Table 13-36: Number of people highly sleep disturbed – 2022 Relevant Action vs Baseline Scenarios

Scenario	No. People Highly Sleep Disturbed	
	Excluding Consented Developments	Including Consented Developments
2022 Relevant Action	24,355	29,812
2018 Baseline	42,260	48,062
2022 Baseline	19,690	24,479
2025 Consented	33,207	38,415

Comparing the 2022 Relevant Action scenario with the 2018 Baseline, the number of people exposed to aircraft noise is forecast to reduce at most contour levels but increase at the contour levels of 55 and 60 dB L_{night}. Overall the number of people assessed as highly sleep disturbed by aircraft noise decreases by 42% from 42,260 to 24,355. However, the number of people exposed to at least a high level of noise (i.e. 55 dB L_{night} or above) increases from 753 to 1,152 excluding consented developments.

Comparing the 2022 Relevant Action scenario with the 2022 Baseline, the number of people exposed to aircraft noise is forecast to increase, for all contour levels. Consequently, the number of people assessed as highly sleep disturbed by aircraft noise also increases, specifically by 24% from 19,690 to 24,355. The number of people exposed to at least a high level of noise (i.e. 55 dB L_{night} or above) increases from 284 to 1,152 excluding consented developments.

Table 13-50 in the original EIAR lists the HA values for 2025 Relevant Action and Baseline scenarios.

Below the table it states:

"*Comparing the 2025 Relevant Action scenario with the 2025 Baseline, the number of people exposed to aircraft noise is forecast to increase, for all contour levels. Consequently, the number of people assessed as highly sleep disturbed by aircraft* ***noise increases by 26% from 19,464 to 24,456****. The number of people exposed to at least a high level of noise (i.e. 55 dB Lnight or above)* ***increases from 281 to 1,157*** *excluding consented developments."*

Therefore, the number of people highly sleep disturbed in 2025 would be **24456** and the number exposed to >55 dB Lnight would be **1157** assuming the daa's Relevant Action application was granted.

Below is a summary of the noise metrics from the various scenarios from the original planning application in December 2020.

The 2025 Relevant Action clearly increases the number of people affected by noise compared to 2025 Baseline.

Scenario	Highly Annoyed	Highly Sleep Disturbed	>65 dB Lden	>55 dB Lnight
2018 Baseline	110234	42260	251	753
2022 Baseline	65227	19690	133	284
2022 Relevant Action	69428	24355	227	1152
2025 Baseline	63316	19464	128	281
2025 Relevant Action	**67760**	**24456**	**218**	**1157**

REVISED EIAR

With the revised application by the daa, the noise statistics changed as the daa changed to use dual runways simultaneously between 06:00-08:00 and provided revised passenger growth forecasts.

What has changed since the EIAR was submitted in December 2020?

This EIAR chapter has been updated in response to a Request for Further Information (RFI) from Fingal County Council dated 19/02/2021. As well as several minor corrections, including minor removals from and additions to the earlier text, the chapter has been revised to:

- Address additional assessment years requested by the Council
- Respond to the latest passenger growth forecasts at Dublin Airport

In a change to the modelled runway usage, the revised EIAR assumes that in 2025 and 2035 both parallel runways are used for departures in the 06:00 to 08:00 i.e. semi-mixed mode. For 2022, it is assumed that segregated mode is in use 06:00 to 08:00 (no change from December EIAR).

The EIAR has been updated to account for this change and all modelling and assessment are revised accordingly. The above does not change the description of the Relevant Action.

Using tables 13-23, 13-29, 13-40, 13-45 and 13-50 of the revised EIAR:

Scenario	Highly Annoyed	Highly Sleep Disturbed	>65 dB Lden	>55 dB Lnight
2018 Baseline	110238	42260	251	753
2022 Permitted	50603	18789	94	222
2022 Proposed	52713	19188	142	356
2025 Permitted	64241	22500	119	280
2025 Proposed	**79405**	**37080**	**196**	**1059**

ORIGINAL EIAR VS REVISED EIAR

Comparing the original planning application in December 2020 to the revised application and focusing on the 2025 Relevant Action and 2025 Proposed scenarios, which are the scenarios assuming the application is granted to remove the night-time operating restrictions, it is very evident that the revised application (with the revised growth forecast and dual runways for departure between 06:00-08:00) leads to a substantial increase in people highly annoyed (+**17.2%**) and highly sleep disturbed (+**51.6%)** compared to the original application.

Scenario	Highly Annoyed	Highly Sleep Disturbed	>65 dB Lden	>55 dB Lnight
2025 Relevant Action	67760	24456	218	1157
2025 Proposed	**79405**	**37080**	**196**	**1059**

RESIDUAL EFFECTS

Section 13.9.8 of the revised EIAR gives a summary of the Residual Effects of noise which takes account of the effect of the residential insulation schemes.

In section 13.9.10 it states:

"*Considering the Assessment Year of 2025, the residual effects of the Proposed Scenario when compared to the Permitted Scenario are a net significant adverse effect for 46 people in terms of the Lden metric and a* ***net significant adverse effect for 10,474*** *people in terms of the Lnight metric*."

Therefore, by granting permission to remove the night-time restrictions, and taking the insulation schemes into account, a net 10474 people will be significantly adversely affected in 2025 compared with the existing restrictions being left in place.

Residual Effects

13.9.8 The residual effects, after the benefit of the residential sound insulation schemes has been allowed for, are summarised in Table 13-64. The table includes all people in existing residential receptors who are exposed to at least 45 dB L_{den} or 40 dB L_{night} in at least one of the scenarios.

Table 13-64: Summary of Residual Air Noise Effects, Proposed vs Permitted

Year	L_{den} Residual Effects			L_{night} Residual Effects		
	Significant Beneficial	Significant Adverse	Not Significant	Significant Beneficial	Significant Adverse	Not Significant
2022	79	10	368,727	151	8,985	166,605

2025	8	54	511,742	86	10,560	257,813
2035	0	20	255,657	12	4,284	131,432

13.9.9 Considering the Assessment Year of 2022, the residual effects of the Proposed Scenario when compared to the Permitted Scenario are a net significant beneficial effect for 69 people in terms of the L_{den} metric and a net significant adverse effect for 8,834 people in terms of the L_{night} metric.

13.9.10 Considering the Assessment Year of 2025, the residual effects of the Proposed Scenario when compared to the Permitted Scenario are a net significant adverse effect for 46 people in terms of the L_{den} metric and a net significant adverse effect for 10,474 people in terms of the L_{night} metric.

CONCLUSION

In its conclusion the HSE states that:

- "*All efforts should be made by the DAA to ensure as many people as possible are protected from the adverse health effects associated with aircraft noise as outlined above in this report. This must include reducing aircraft noise levels to below 45 dB Lden, and for night noise exposure to below 40 dB Lnight*".
- "*The EHS is of the opinion that The World Health Organisation's Environmental Noise Guidelines of 45 dB Lden and 40 dB Lnight should have been used for ground noise assessments*".

9.0 HEALTH AND HEALTH COSTS

SUMMARY

- Imperative that independent noise monitoring is conducted on the dwellings most affected by aviation noise from Dublin Airport, including properties already insulated by the daa.
- Imperative that a health study be carried out on the population surrounding Dublin Airport to understand the health of the population relative to the norm.
- ANCA and the daa have totally ignored the objective of Target 2 of the EU Action Plan "Towards a zero pollution for air, water and soil" adopted in May 2021 as the targets for 2030 are set at far higher noise levels in 2019 and 2018 which exceed the baseline year of 2017 required under the EU Action Plan. The selection of 2019 as the baseline is contrary to ANCA's own SEA document used to screen the project.
- Neither ANCA nor the daa have evaluated the serious health effects and costs associated with such health effects of their proposed modification to the current restrictions in place at Dublin Airport. This has serious health implications for the inhabitants within the St Margarets The Ward area.
- ANCA and the daa are proposing noise insulation as a mitigation measure to night-time noise increases within the St Margarets The Ward communities. This is contrary to Fingal County Council advice within their own Development Plan and testing carried out within the St Margarets The Ward area on housing that has already been insulated by the daa recently indicates the guidance referred to by Fingal County Council and the WHO cannot be achieved and will cause serious health issues of those affected by the proposed increase in night time noise.
- No mitigation measures are proposed by the daa or ANCA to solve the health implications being imposed by the removal of the existing restrictions.

LATEST RESEARCH

Latest research since the WHO 2018 Guidelines has been collated in the review paper '*Environmental risk factors and cardiovascular diseases: a comprehensive expert review*' (https://academic.oup.com/cardiovascres/advance-article/doi/10.1093/cvr/cvab316/6381568). This review forms part of the medical health report from Professor Münzel which is part of this submission. The supplementary material associated with the review summarises the latest findings:

Table S1. Epidemiological/observational evidence for an association between traffic noise and cardiovascular disease, events, and mortality with focus on recent studies.

First author / year	Population / cohort	Noise sources	Major outcomes	Ref
Roca-Barceló, 2021	21,936 CVD deaths	Aircraft noise	CVD and CHD mortality risk tended to increase with increasing levels of aircraft noise (L_{dn}), while no linear trend was found for stroke mortality.	1
Kupcikova, 2021	502,651 subjects	Road traffic noise	Road traffic noise exposure (L_{den} >65 vs. ≤55 dB(A)) led to 0.77% (95% CI 0.60-0.95) higher SBP, 0.49% (95% CI 0.32-0.65) higher DBP, 0.79% (95% CI 0.11-1.47) higher triglycerides, and 0.12% (95% CI –0.04-0.28) higher glycated hemoglobin.	2
Yankoty, 2021	1,065,414 subjects	Total environmental / transportation noise	The HRs for incident MI were 1.12 (95% CI 1.08-1.15), 1.11 (95% CI 1.07-1.14), and 1.10 (95% CI 1.06-1.14) per 10 dB(A) increase in L_{Aeq24}, L_{den}, and L_{night}, respectively.	3
Gilani, 2021	909 subjects	Road traffic noise	An OR of 2.25 (95% CI 1.38-3.67) for the prevalence of CAD per 5 dB(A) increase in road traffic noise (L_{den}) was found.	4
Saucy, 2021	24,886 CVD deaths	Aircraft noise	Acute increases in aircraft noise 2 hours preceding death were associated with total CVD mortality (OR 1.44, 95% CI 1.03-2.04) for the highest group of exposure (L_{Aeq} >50 vs. <20 dB).	5
Baudin, 2021	5,860 subjects	Aircraft noise	Aircraft noise levels per 10 dB(A) increase in L_{night} increased the odds of antihypertensive medication by 43% (OR 1.43, 95% CI 1.19-1.73).	6
Osborne, 2020	498 subjects	Combination of road traffic and aircraft noise	Higher noise exposure per 5 dB(A) increase in L_{Aeq24} predicted major CV events (HR 1.341, 95% CI 1.147-1.567).	7
Bai, 2020	37,441 cases of incident acute MI and 95,138	Road traffic noise	Road traffic noise (L_{Aeq24}) per IQR increase was associated with an elevated risk of incident acute MI (HR 1.07, 95% CI 1.06-1.08) and CHF (HR, 1.07 95% CI 1.06-1.09).	8

	cases of incident CHF			
Thacher, 2020	52,758 subjects	Road traffic noise	At the most exposed façade, road traffic noise per IQR increase was associated with a 13% (HR 1.13, 95% CI 1.06-1.19) and 11% (HR 1.11, 95% CI 0.99-1.25) higher CVD and stroke mortality, respectively. At the least exposed façade, road traffic noise remained to be associated with CVD (HR 1.09, 95% CI 1.03-1.15), IHD (HR 1.10, 95% CI 1.01-1.21), and stroke (HR 1.06, 95% CI 0.95-1.19) mortality.	9
Thacher, 2020	52,053 subjects	Road traffic noise	There was no association between road traffic noise and filled prescriptions for antihypertensive drugs.	10
Andersson, 2020	6,304 men	Road traffic noise	The HRs were 1.08 (95% CI 0.90-1.28) for CV mortality, 1.14 (95% CI 0.96-1.36) for IHD incidence, and 1.07 (95% CI 0.85-1.36) for stroke incidence in response to road traffic noise (L_{Aeq24} >60 vs. <50 dB.	11
Shin, 2020	Subjects without a history of hypertension (701,174) or diabetes mellitus (914,607)	Road traffic noise	An increase in L_{Aeq24} per 10 dB(A) was associated with an 8% increase in incident diabetes mellitus (HR 1.08, 95% CI 1.07-1.09) and a 2% increase in incident hypertension (HR 1.02, 95% CI 1.01-1.03). Similar estimates were obtained for L_{night}.	12
Baudin, 2020	6,105 subjects	Aircraft noise	An increase per 10 dB(A) in L_{night} was associated with an increased risk of hypertension (RR 1.03, 95% CI 1.01-1.06$_t$). An association was also found between aircraft noise annoyance and hypertension risk (RR 1.06, 95%CI 1.00-1.13 for highly annoyed vs. not highly annoyed).	13
Pyko, 2019	20,012 subjects	Road traffic, railway, aircraft noise	In subjects exposed to all three traffic noise sources at ≥45 dB L_{den}, risks of IHD were elevated with a HR of 1.57 (95% CI 1.06-2.32), and a comparable observation for stroke (HR 1.42, 95% CI 0.87-2.32).	14
Héritier, 2019	4.4 million subjects	Road traffic, railway, aircraft noise	MI mortality was increased in response to road traffic (HR 1.034, 95% CI 1.014-1.055), railway (HR 1.020, 95% CI 1.007-1.033), and aircraft noise (HR 1.025, 95% CI 1.005-1.046) per 10 dB increase in L_{den}.	15
Héritier, 2018	4.41 million subjects	Combination of road traffic, railway, aircraft noise	For the core night, the highest HR was observed for IHD mortality (1.025, 95% CI 1.016-1.034), while this association was lower for the daytime (1.018, 95% CI 1.009-1.028). HF mortality and daytime noise was associated with the highest HR (1.047, 95% CI 1.027-1.068).	16
Pyko, 2018	4,854 subjects	Road traffic, railway, aircraft noise	Aircraft noise increased the incident risk of hypertension by 16% (HR 1.16, 95% CI 1.08-1.24) per 10 dB increase in L_{den}. Road traffic and railway noise were not associated with incidence of hypertension.	17
Yang, 2018	663 subjects	Road traffic noise	Road traffic noise per 5 dB(A) increase was associated with the prevalence of CVD (OR 2.23, 95% CI 1.26-3.93).	18
Cai, 2018	21,081 incident CVD cases	Road traffic noise	No associations were found between road traffic noise and incident CVD, IHD, or CBVD in the total population.	19
Hahad, 2018	14,639 subjects	Road traffic, railway, aircraft noise	Traffic-related noise annoyance is associated with increased prevalence of AF.	20
Héritier, 2017	4.41 million subjects	Road traffic, railway, aircraft noise	HRs for MI mortality were per 10 dB increase in L_{den} 1.038 (95% CI 1.019-1.058) for road traffic, 1.018 (95% CI 1.004-1.031) for railway, and 1.026 (95% CI 1.004-1.048) for aircraft noise.	21
Zeeb, 2017	137,577 cases and 355,591 controls	Road traffic, railway, aircraft noise	There was no association between any of the traffic noise sources and incident hypertension. Likewise, no association between nighttime noise levels and hypertension was found. For the group of subjects with newly diagnosed hypertension followed by hypertensive heart disease, the ORs were elevated.	22
Fuks, 2017	41,072 subjects	Road traffic noise	A weak relationship between road traffic noise and incident self-reported hypertension was found, whereas no conclusive association with measured hypertension was established.	23

Pitchika, 2017	2,552 subjects	Road traffic noise	No association between road traffic noise (L_{Aeq24}) and prevalent hypertension was found.	24
Roswall, 2017	50,744 subjects	Road traffic noise	Road traffic noise was associated with a higher risk of MI, with a HR of 1.14 (95% CI 1.07-1.21) per IQR increase in L_{den}.	25
Evrard, 2017	1,244 subjects	Aircraft noise	Only in men, a 10 dB(A) increase in aircraft noise (L_{night}) was associated with risk of hypertension (OR of 1.34, 95% CI 1.00-1.97).	26
Dimakopoulou, 2017	780 subjects	Aircraft noise	A 10 dB increase in L_{night} resulted in an OR of 2.63 (95% CI 1.21-5.71) for hypertension and of 2.09 (95% CI 1.07-4.08) for doctor-diagnosed cardiac arrhythmia.	27
Sørensen, 2017	57,053 subjects	Road traffic noise	An IRR of 1.14 for HF (95% CI 1.08-1.21) per IQR increase in L_{den} road traffic noise was found.	28
Seidler, 2016	19,632 cases and 834,734 controls	Road traffic, railway, aircraft noise	A 10 dB increase in L_{Aeq24} was associated with higher odds of MI in response to road traffic (2.8%, 95% 1.2-4.5) and railway noise (2.3%, 95% CI 0.5-4.2), but not aircraft noise. Aircraft noise levels of 60 dB and above were associated with increased MI risk (OR 1.42, 95% CI 0.62-3.25).	29
Recio, 2016	Cohort of subjects ≥65 years	Road traffic noise	Short-term road traffic noise increased the risk of death from IHD, MI, and CBVD.	30
Monrad, 2016	57,053 subjects	Road traffic, railway noise	A 10 dB increase in L_{den} road traffic noise was associated with a 6% increased risk of AF (IRR 1.06, 95% CI 1.00-1.12), which was weaker after further adjustment for air pollutants. AF risk was not related to railway noise.	31
Sørensen, 2011	57,053 subjects	Road traffic noise	An IRR of 1.14 for stroke (95% CI 1.03-1.25) per 10 dB increase in L_{den} road traffic noise was found.	32
Beelen, 2009	120,852 subjects	Road traffic noise, traffic intensity	Traffic intensity was associated with CV mortality, with highest RR of 1.11 (95% CI 1.03-1.20 per increase in 10,000 motor vehicles/24 h). Road traffic noise (>65 dB(A)) was associated with increased risk of IHD (RR 1.15, 95% CI 0.86-1.53) and HF mortality (RR 1.99, 95% CI 1.05-3.79),	33
			which was attenuated after further adjustment air pollution and traffic intensity.	

CVD: Cardiovascular disease, CHD: Coronary heart disease, L_{dn}: Day-night noise levels, SBP: Systolic blood pressure, DPB: Diastolic blood pressure, HR: Hazard ratio, MI: Myocardial Infarction, $L_{Aeq(time\ period)}$: Noise levels over a certain period of time, L_{night}: Night noise levels, IHD: Ischemic heart disease, CHF: Congestive heart failure, IQR: Interquartile range, CBVD: Cerebrovascular disease, dB: Decibel, OR: Odds ratio, CI: Confidence interval, CAD: Coronary artery disease, L_{den}: Day-evening-night noise levels, AF: Atrial fibrillation, IRR: Incidence rate ratio, RR: Relative risk

It is important to point out that a majority of the above research did not form part of the WHO 2018 Guidelines as it wasn't available in time for the review. Neither ANCA nor the daa have considered this latest research. ANCA as the noise regulator has a duty to keep abreast of latest scientific research in order to perform its duties. HA and HSD figures are real people. ANCA needs to understand that these are real people and families and not just numbers. It will be responsible for inflicting night noise on residents and damaging their health. Who do residents sue for their ill health? ANCA and Fingal County Council will be responsible for removing the restrictions. They cannot hide behind the Aircraft Noise Bill as they have crafted the Noise Abatement Objective to allow tens of thousands of people to be Highly Sleep Disturbed. The onus rests with ANCA and Fingal County Council.

HEALTH

In the EIAR, chapter 7 is devoted to Population and Human Health.

The European Environmental Agency (EEA) published a report in 2020 titled 'Environmental Noise in Europe – 2020'. The report states that:

"Chronic exposure to environmental noise has significant impacts on physical and mental health and well-being. Exposure to environmental noise is a widespread problem in Europe, with at least one in five people exposed to levels considered harmful to health. Given the negative impacts on human health and the large number of people affected, environmental noise is therefore a significant concern for citizens and policy makers. Reducing environmental noise is a key objective under the Seventh Environment Action Programme (7th EAP) and the Environmental Noise Directive (END)."

Key findings of the report:

Environmental noise from road, rail, aircraft and industry sources affects millions of people, causing significant public health impacts

• Long-term exposure to environmental noise is estimated to cause

- 12000 premature deaths and
- contribute to 48000 new cases of ischaemic heart disease per year in the European territory.
- It is estimated that 22 million people suffer chronic high annoyance and
- 6.5 million people suffer chronic high sleep disturbance.
- As a result of aircraft noise, 12500 schoolchildren are estimated to suffer learning impairment in school.

• These significant health impacts are most likely to be underestimated, with new WHO evidence demonstrating effects at levels below the obligatory END reporting thresholds. In addition, the END does not comprehensively cover all urban areas, roads, railways and airports across Europe.

(i.e. Noise below current END reporting values also cause health effects)

• Exposure to environmental noise does not affect everyone equally. Socially deprived groups, as well as groups with increased susceptibility to noise, may suffer more pronounced health-related impacts of noise.

The report further states that the policy objectives on environmental noise have not been achieved. The number of people exposed to high levels of noise has not decreased. The key objective of the 7th EAP of significantly reducing noise pollution in the EU and moving closer to the WHO recommended levels by 2020 has not been achieved. Fingal County Council and ANCA need to explain how they moved closer to the WHO recommended levels by 2020. Note this is recommended levels and not interim levels. The 7th EAP also categories 'High' noise levels as those levels **> 55 dB Lden and > 50 dB Lnight**. Fingal County Council and ANCA need to support these definitions of high noise.

The report states that 4 million people are exposed to high levels of aircraft noise. It also states how noise pollution is a threat not only to humans but also to wildlife.

"Anthropogenic noise affects a wide variety of terrestrial and marine wildlife species causing a range of physiological and behavioural responses. These can reduce reproductive success and increase mortality and emigration, resulting in lower population densities."

The noise contours for Dublin Airport extend over the Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). No analysis has been carried out on the effects of aircraft noise on these areas.

The new divergent flight routes and potential night-time use of the North Runway has not been studied for their effects on existing wildlife and in particular bird species. These flight routes have changed since the original EIS in 2004-2007. It has become very apparent in Fingal that many bird species are now thriving under the quieter skies and the effects of changing flight routes and operation times need to be examined.

Environmental noise is the second biggest environmental killer after air pollution.

The WHO have strongly recommended that noise from aircraft should be reduced below 45dB Lden and 40dB Lnight as aircraft noise above these levels are associated with adverse health effects such as cardiovascular disease, hypertension and cognitive impairment in children. The WHO report states that "1 million healthy years of life are lost every year in the EU". A 2011 WHO report places "the burden of disease from environmental noise as the 2nd highest after air pollution". Interestingly the WHO 2018 report states that overall, the GDG "estimated that the benefits gained from minimizing adverse health effects due to aircraft noise exposure outweigh the possible (economic) harms".

Questions need to be asked of Fingal County Council as to why no health study has ever been conducted on the residents of Fingal living in the vicinity of Dublin Airport. The Council is fixated on the economic benefits of the airport to the detriment of the population of Fingal.

In addition to the WHO report I would like to point to a recent paper at Euronoise 2018 titled 'Transportation noise and incidence of hypertension' (http://www.euronoise2018.eu/docs/papers/92_Euronoise2018.pdf). The results "*indicated a clear association for aircraft noise" and "a particularly high risk estimate for those exposed to both aircraft and road traffic noise, indicating that exposure to multiple sources of traffic noise may be especially harmful*".

The new noise zones recently incorporated into the Fingal Development Plan are a clear recognition by Fingal County Council that serious adverse health effects occur at exposure levels well below those that are mitigated for in this application. All future properties that lie inside Zones A, B and C require to be thoroughly insulated as outlined by the WHO 2018 Guidelines.

Note that this variation to the Development Plan states that in Zone A "*all noise sensitive developments within this zone may potentially be exposed to high levels of aircraft noise, which may be harmful to health or otherwise unacceptable. The provision of new noise sensitive developments will be resisted*". Under this variation it is acknowledged by Fingal County Council that noise insulation is not a solution within Zone A which covers most of St Margarets The Ward.

The Variation refers to “ProPG Planning and Noise Professional Practice Guidance on planning and noise for new residential developments”, dated May 2017 as the guidance for “Good Acoustic Design”.

With reference to the ProPG document at Fig 2 it notes that in bedrooms between the hours of 23:00-07:00 that 45dB LAmax should not be exceeded. Footnote 4 states “***in most circumstances in noise sensitive rooms at night (eg bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB LAmax more than 10 times per night***”.

The St Margarets The Ward Residents have carried out a noise survey of a number of houses recently insulated by the daa under their noise insulation programme. Please refer to noise report from the MLM Group.

As a minimum requirement for an Independent Regulator, independent monitoring should be carried out in the areas closest to the airport. The regulator should not accept only the results from the noise monitoring stations. It should have its own independent analysis carried out to understand how the populations closest to the airport are being affected. This should also be carried out on dwellings that have been insulated to understand the residual effects of noise post insulation.

The Independent Regulator should also conduct a health survey of the population surrounding the airport. A regulator cannot understand the effects of noise without conducting a health screening. The regulator has not engaged medical expertise on the health effects of noise and is thus not adhering to regulation EU598/2014:

(11) The importance of health aspects needs to be recognised in relation to noise problems, and it is therefore important that those aspects be taken into consideration in a consistent manner at all airports when a decision is taken on noise abatement objectives, taking into account the existence of common Union rules in this area. Therefore, health aspects should be assessed in accordance with Union legislation on the evaluation of noise effects.

In addition, competent authorities may take due account of the following factors:

(1) the health and safety of local residents living in the vicinity of the airport;

HEALTH BURDEN

In 2016 the EU carried out a review and evaluation of the Environmental Noise Directive titled "Evaluation of Directive 2002/49/EC Relating to the Assessment and Management of Environmental Noise" (https://op.europa.eu/en/publication-detail/-/publication/7febde6d-9a89-11e6-9bca-01aa75ed71a1).

"*A cost-benefit analysis (CBA) was conducted to quantify (in monetary terms) the cost-effectiveness of the END. The benefits are mainly gained by the population affected by excessive noise. It was not possible to quantify some of the strategic benefits of the END, such as its role in stimulating awareness of noise as an issue, facilitating the generation of large and consistent spatial datasets on noise exposure and supporting actions in other areas (e.g. development of technical standards). The CBA is therefore based primarily on an assessment of the contribution made by measures identified in R1 NAPs to reducing exposure to harmful levels of noise.*

The analysis revealed that the END has made a positive contribution to reducing population exposure to high levels of environmental noise. Whilst the magnitude of costs and benefits of noise mitigation measures was found to vary between countries and sources, a positive cost-benefit relationship was identified under a range of scenarios, where the scenarios reflect both differences in the underlying assumptions regarding the extent to which costs and benefits can be attributed to the END and the range of uncertainty in relation to the value of impacts on human health. ***The base case scenario results in a favourable cost-benefit ratio (of 1:29) overall****, although the ratios vary substantially between measures. The benefits are likely to be understated, since the analysis only considered the effects of noise reduction on the '****highly annoyed****' and '****highly sleep disturbed****' populations. It should be noted that whilst the CBA is an important element of assessing efficiency, measure-level data only provides a proxy, since NAP measure implementation is not compulsory and does not take into account the strategic, qualitative benefits of the END (see impacts under "effectiveness").*"

The review references the 'EEA's 2014 Noise in Europe Report' report that outlines that the population exposure due to environmental noise is a major health problem in Europe which

"*causes at least 10000 cases of premature death in Europe each year, with almost 20 million adults annoyed and a further 8 million suffering from sleep disturbance due to environmental noise*". It also notes that noise pollution causes 43000 hospital admissions in Europe per year.

The 7th Environment Action Programme (7th EAP) provides an overarching policy framework for European environment policy until 2020 and sets out a long-term vision for 2050.

Priority Objective 3 addresses challenges to 'human health and wellbeing', such as air and water pollution and excessive noise.

Priority Objective 8 – 'Sustainable Cities' notes that "Europe is densely populated and 80 % of its citizens are likely to live in or near a city by 2020. Cities often share a common set of problems such as [inter alia] poor air quality and high levels of noise".

In order to safeguard the Union's citizens from environment-related pressures and risks to health and well-being, the **7th EAP aims to ensure that by 2020 noise pollution in the Union has significantly decreased, moving closer to the WHO recommended levels**. It notes that this implies "implementing an updated Union noise policy aligned with the latest scientific knowledge, and measures to reduce noise at source, including improvements in city design".

It is very clear from the Noise Action Plans and the increase in noise levels at Dublin Airport, that Ireland has failed in relation to the 7th EAP.

On the 12th of May 2021, the EU Commission adopted the EU Action Plan "Towards a zero pollution for air, water and soil".

Target 2 of this Action Plan is "by 2030 the EU should reduce by 30% the share of people chronically disturbed by transport noise". This 30% reduction is from the reference year 2017 and is based on the EU study (2021) "Assessment of Potential Health Benefits of Noise Abatement Measures in the EU".

At section 2.25 of the ANCA SEA draft environmental report by Noise Consultants it clearly states that “in the case of the European Commission’s Zero Pollution Action Plan (2021), this overarching EU policy sets clear targets with respect to reducing the number of people chronically disturbed by transport noise. As part of this action plan target 2 states that “by 2030 the EU should reduce by 30% the share of people chronically disturbed by transport noise [from a 2017 baseline]””.

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2.25 *In the case of the European Commission's Zero Pollution Action Plan (2021), this overarching EU policy sets clear targets with respect to reducing the number of people chronically disturbed by transport noise. As part of this Action Plan, Target 2 states that:*

"By 2030 the EU should reduce by 30% the share of people chronically disturbed by transport noise [from a 2017 baseline]."

Yet ANCA have set the baseline at 2019 figures which was the busiest and noisiest year in the history of Dublin Airport, despite the fact that their own SEA documentation above clearly states 2017 as the baseline year.

This must be reported to the Irish Government as a total breach of Ireland to meet the adopted action plan by Europe. The daa are also in breach of the EU requirements as they adopted 2018 as the baseline year despite the escalation of noise over successive noise action plans as indicated below. This is a blatant attempt to disregard the protection of health of the St Margarets The Ward community over commercial considerations despite the EU’s regulations and requirements to reduce harmful noise by 30% from 2017-2030.

In section 1.3.2, the EU review references the WHO 2011 publication on the ‘Burden of Disease from environmental noise through the quantification of healthy life years lost in

Europe' (http://www.euro.who.int/__data/assets/pdf_file/0008/136466/e94888.pdf). According to the WHO, a Disability-Adjusted Life Years (DALY) represents one lost year of "healthy" life. "The sum of these DALYs across the population, or the burden of disease, can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability"

The review in its cost benefit analysis using the value of a VOLY (value of life year lost) for a DALY. It used a value of **110,987** euro, derived from the cost benefit analysis of the Air Quality Package for Europe (https://ec.europa.eu/environment/air/pdf/TSAP%20CBA.pdf), adjusted to 2014 prices using the Eurostat GDP deflator.

The EEA produced a report in 2020 (https://www.eea.europa.eu/publications/environmental-noise-in-europe) on the Health Impact Assessment of noise.

In Section 3.4 of this EEA report, it discusses the Burden of Disease of noise in terms of DALYs/year and DALYs/year/million (Table 3.6). It only looks at noise >55dB Lden and >50dB Lnight. It states that this is an underestimate as the END didn't specify lower levels. Roughly 1 million healthy years of life are lost every year.

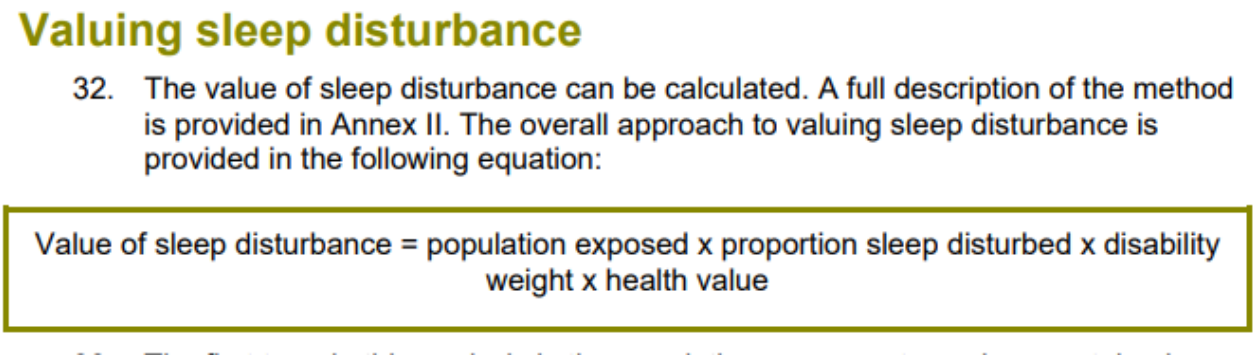
"*The associated decline in the population's health because of noise has an economic impact in Europe. There are different approaches for quantifying the economic costs of noise on health, one of which relies on assigning a monetary cost per DALY (Defra, 2014.) Although the assessment of the costs in terms of DALYs may differ from country to country, if we assume that the* ***monetary cost per DALY is EUR 78 500*** *(VITO, 2003), the resulting economic impact of noise is estimated to be* ***EUR 35 billion for annoyance****,* ***EUR 34 billion for sleep disturbance****,* ***EUR 12 billion for IHD and EUR 5 million for cognitive impairment in children****. Monetary costs can also exist as a result of reduced house prices, loss of labour days and reduced possibilities for land use (EC, 2000)."*

In the Defra 2014 report titled 'Environmental Noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet' (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/380852/environmental-noise-valuing-imapcts-PB14227.pdf), it recommends the use of disability-adjusted life years (DALYs) to reflect the value of impact'.

DALY = Years of life lost (YLL) + Years lived with Disability (YLD)

This analysis focuses solely on years lived with disability (YLD). In the DEFRA 2014 report it assumes that sleep disturbance does not result in premature death and therefore YLL is zero. However, recent scientific evidence suggests that sleep disturbance can cause premature death. For simplicity in this analysis, YLL is assumed zero although this should be investigated further by ANCA.

For Sleep Disturbance, the value is defined by the following formula:



Valuing sleep disturbance

32. The value of sleep disturbance can be calculated. A full description of the method is provided in Annex II. The overall approach to valuing sleep disturbance is provided in the following equation:

Value of sleep disturbance = population exposed x proportion sleep disturbed x disability weight x health value

This equates to: Total HSD x 0.07 x Value of DALY

The Highly Sleep Disturbed (HSD) population can be calculated using the formulae in Annex III of 2002/49/EC (END) which were inserted by EU Directive 2020/367 (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020L0367).

$$AR_{HSD,air} = \left(16.7885 - 0.9293 * L_{night} + 0.0198 * L_{night}^{\ 2}\right)/_{100} \text{ (Formula 9)}$$

for aircraft noise.

3.3. **For HA and HSD in the case of road, railway and aircraft noise, the total number N of people affected by the harmful effect *y*** (number of attributable cases) due to the source *x*, for each combination of noise source *x* (road, railway or aircraft source) and harmful effect *y* (HA, HSD), is then:

$N_{x,y} = \sum_j [n_j * AR_{j,x,y}]$ (Formula 12)

Where:

— $AR_{x,y}$ is the AR of the relevant harmful effect (HA, HSD), and is calculated using the formulas set out in point 2 of this Annex, calculated at the central value of each noise band (e.g.: depending on availability of data, at 50,5 dB for the noise band defined between 50-51 dB, or 52 dB for the noise band 50-54 dB),

— n_j is the number of people that is exposed to the *j*-th exposure band.

The disability weight for Sleep Disturbance has been assigned by the WHO in their 2018 Guidelines as **0.07**. This means that being highly sleep disturbed due to environmental noise reduces a completely healthy individual's health by around 7%.

The DEFRA 2014 report uses the Department of Health DALY value of Stg 60,000. This estimate would need to be revised upwards in line with inflation.

For Sleep Annoyance, the value is defined by the following formula:

Value of annoyance = population exposed x proportion highly annoyed x disability weight x health value

From Annex III of 2002/49/EC (END):

$$AR_{HA,air} = \left(-50.9693 + 1.0168 * L_{den} + 0.0072 * L_{den}^{\ 2}\right)/_{100} \quad \text{(Formula 6)}$$

for aircraft noise.

3.3. **For HA and HSD in the case of road, railway and aircraft noise, the total number N of people affected by the harmful effect *y*** (number of attributable cases) due to the source *x*, for each combination of noise source *x* (road, railway or aircraft source) and harmful effect *y* (HA, HSD), is then:

$N_{x,y} = \sum_j [n_j * AR_{j,x,y}]$ (Formula 12)

Where:

— $AR_{x,y}$ is the AR of the relevant harmful effect (HA, HSD), and is calculated using the formulas set out in point 2 of this Annex, calculated at the central value of each noise band (e.g.: depending on availability of data, at 50,5 dB for the noise band defined between 50-51 dB, or 52 dB for the noise band 50-54 dB),

— n_j is the number of people that is exposed to the *j*-th exposure band.

The disability weight for Sleep Annoyance has been assigned by the WHO in their 2018 Guidelines as **0.02**. This means that being highly annoyed due to environmental noise reduces a completely healthy individual's health by around 2%.

The DEFRA 2014 report uses the Department of Health DALY value of Stg 60,000.

The DEFRA report also looks at Hypertension, Productivity losses and Quiet Areas which are not covered in this analysis of the daa's relevant action and ANCA's draft decision. The report estimates that the productivity loss from road traffic noise in England ranges from 2-6 Billion sterling per year.

	%HSD	%HSD plus assuming only 73% in employment
Low	£3,000,000,000	£2,000,000,000
High	£6,000,000,000	£4,000,000,000

ANCA as the independent regulator should also assess productivity losses in Ireland due to aircraft noise.

DALY CALCULATION

The total number of Highly Sleep Disturbed (HSD) and Highly Annoyed (HA) people for various scenarios are presented by the daa in their reporting template and summarized here:

Scenario	Total HSD
2025 Proposed	37080
2025 Permitted	22500
2018	42260
2019	47045

Scenario	Total HA
2025 Proposed	79405
2025 Permitted	64241
2018	115738
2019	110238

In the EU's 2016 review and evaluation of the Environmental Noise Directive titled "Evaluation of Directive 2002/49/EC Relating to the Assessment and Management of Environmental Noise" (https://op.europa.eu/en/publication-detail/-/publication/7febde6d-9a89-11e6-9bca-01aa75ed71a1), it uses a value of **110987** for a DALY.

Calculations were performed using the 3 different DALY values: €78500 (Vito 2003), €70850 (60k stg, DEFRA 2014)) and €110987 (EU review 2016).

Scenario	Total HSD	DW	Total HSD DALYs	Cost of DALY	Total HSD Cost per year
2025 Proposed	37080	0.07	2596	78500	€203,754,600
2025 Permitted	22500	0.07	1575	78500	€123,637,500
2018	42260	0.07	2958	78500	€232,218,700
2019	47045	0.07	3293	78500	€258,512,275

Scenario	Total HA	DW	Total HA DALYs	Cost of DALY	Total HA Cost per year

2025 Proposed	79405	0.02	1588	78500	€124,665,850
2025 Permitted	64241	0.02	1285	78500	€100,858,370
2018	115738	0.02	2315	78500	€181,708,660
2019	110238	0.02	2205	78500	€173,073,660

Scenario	Total HSD	DW	Total HSD DALYs	Cost of DALY	Total HSD Cost per year
2025 Proposed	37080	0.07	2596	70850	€183,898,260
2025 Permitted	22500	0.07	1575	70850	€111,588,750
2018	42260	0.07	2958	70850	€209,588,470
2019	47045	0.07	3293	70850	€233,319,678

Scenario	Total HA	DW	Total HA DALYs	Cost of DALY	Total HSD Cost per year
2025 Proposed	79405	0.02	1588	70850	€112,516,885
2025 Permitted	64241	0.02	1285	70850	€91,029,497
2018	115738	0.02	2315	70850	€164,000,746
2019	110238	0.02	2205	70850	€156,207,246

Scenario	Total HSD	DW	Total HSD DALYs	Cost of DALY	Total HSD Cost per year
2025Proposed	37080	0.07	2596	110987	€288,077,857
2025Permitted	22500	0.07	1575	110987	€174,804,525
2018	42260	0.07	2958	110987	€328,321,743
2019	47045	0.07	3293	110987	€365,496,839

Scenario	Total HA	DW	Total HA DALYs	Cost of DALY	Total HSD Cost per year
2025Proposed	79405	0.02	1588	110987	€176,258,455
2025Permitted	64241	0.02	1285	110987	€142,598,317
2018	115738	0.02	2315	110987	€256,908,268
2019	110238	0.02	2205	110987	€244,699,698

SUMMARY OF DIFFERENT DALY VALUES

Scenario	Total Yearly Cost for HA and HSD (Vito 2003)	Total Yearly Cost for HA and HSD (DEFRA 2014)	Total Yearly Cost for HA and HSD (EU 2016)
2025 Proposed	€328,420,450	€296,415,145	€464,336,312
2025 Permitted	€224,495,870	€202,618,247	€317,402,842
2018	€413,927,360	€373,589,216	€585,230,012
2019	€431,585,935	€389,526,924	€610,196,537

EU598/2014 Annex II states that Competent Authorities may take account of health and safety of local residents and environmental sustainability:

ANNEX II

Assessment of the cost-effectiveness of noise-related operating restrictions

The cost-effectiveness of envisaged noise-related operating restrictions will be assessed taking due account of the following elements, to the extent possible, in quantifiable terms:

(1) the anticipated noise benefit of the envisaged measures, now and in the future;

(2) the safety of aviation operations, including third-party risks;

(3) the capacity of the airport;

(4) any effects on the European aviation network.

In addition, competent authorities may take due account of the following factors:

(1) the health and safety of local residents living in the vicinity of the airport;

(2) environmental sustainability, including interdependencies between noise and emissions;

(3) any direct, indirect or catalytic employment and economic effects.

It also lists '*environmental sustainability, including interdependence between noise and emissions*'. The daa have provided no costings on environmental sustainability or

interdependencies between noise and emissions. ANCA, as regulator, should insist on these costings to quantify the environmental burden of its draft decision.

The 'Aircraft Noise Information Reporting Template Guidance' document from ANCA states in section 3.2 Noise Effects Data, that the assessment of costs of noise exposure should include costs of annoyance and costs of health.

The daa have failed to quantify in monetary terms the costs on health of the population exposed to noise as a result of aircraft activity at Dublin Airport. This is a serious omission from the cost effective analysis.

The "Airport Noise Infomration Reporting Template Guidance" document from ANCA states the following at section 3.2:

3.2 Noise Effects Data

Using the noise exposure data, the effects information should be provided:

- Assessment of any significant effects of noise on sensitive receptors;
- Assessment of harmful effects due to long term exposure to noise from airport operations, including:
  - Number of people living in dwellings highly annoyed;
  - Number of people living in dwellings highly sleep disturbed;
  - Sub-totals per Electoral Division
    - Where effects are to be reported per Electoral Division, this should be achieved by prefixing the elements presented in the 'Health' tab to report designators for the Electoral Divisions
- Assessment of costs of noise exposure, including:
  - Costs of annoyance;
  - Costs of health.

We note that the daa did not submit any of these costs which is a glaring omission as the costs of same are in the order of 610 million euro per year which is alarming.

It is also worth noting that ANCA requested LAmax and SEL data:

daa are invited to provide further, objective measures, using the following or derivations of, for example:

- L_{day};
- $L_{evening}$;
- L_{Amax}; and
- SEL

These were not provided by the daa. Why? Why are ANCA not insisting on the daa to provide the information. We in St Margarets The Ward were awaiting such vital information.

DAA'S HEALTH EXPERTISE

Following an AIE request to the daa for all documentation and materials compiled by the daa on the health effects of aircraft noise on residents living in the vicinity of an airport, including any medical opinions and reports, any opinions on WHO guidelines and any correspondence or reports provided to senior management, only 4 documents were provided. This decision was appealed to the OCEI Commissioner and below is the feedback from the Commissioner's office.

The daa submits that it hasn't sought medical opinions or reports or even compiled material on the health effects of aircraft noise. How is it possible to do a health impact assessment without this information?

> 19. DAA does not accept that it is hiding information. DAA submits that it has not commissioned medical opinions and reports on the impact of noise on nearby residents; nor has it compiled any materials on the health effects of aircraft noise, save for the five documents identified as falling within scope. DAA submits that, in common with most other airports in other jurisdictions, DAA does not have in-house competency to undertake research and make generalised assessments or judgments on a specialised environmental and health issue such as the health effects of aircraft noise on nearby residents. Rather, the type of information gathered and used by DAA is, by its nature, publicly available, as DAA relies on public health guidance and research to guide its understanding. DAA submits that its approach is determined primarily by international and national regulations which are predicated on reports by specialists and experts at a European and global level. As a result, DAA relies primarily on published material and associated regulations, which now fall under the Aircraft Noise (Dublin Airport) Regulation Act 2019, implementing Regulation (EU) No 598/2014. DAA submits that, while over time it has collected aircraft noise information, that information has been published either as part of its noise contour maps or as part of the noise complaints information provided to local communities on a regular basis. In any event, such information does not include information on the health effects of aircraft noise on nearby residents, so it does not fall within the scope of your request.

The same question can be asked of ANCA. What Health expertise has ANCA sought on the impacts of aircraft noise? As the Independent Noise Regulator has it sought the advice of the HSE or other Health Authorities in Ireland? Has it commissioned its own medical assessments? How can ANCA adjudicate on Noise when it doesn't have the expertise to understand the health impacts?

However as indicated in the previous sections of this report, the tools to calculate the cost associated with health damage to those affected by airport noise are readily available. Under current legislation it is the responsibility of the Competent Authorities to inform affected citizens of the consequences of the imposition of environmental noise on them and to evaluate the cost associated with the consequences of such noise production.

UN REPORT

The UN published a report this month titled 'Frontiers 2022: Noise, Blazes and Mismatches (https://www.unep.org/resources/frontiers-2022-noise-blazes-and-mismatches). It states:

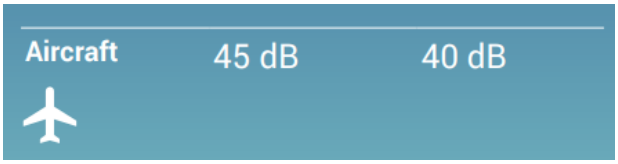
"*Today, noise pollution is a major environmental problem, cited as a top environmental risk to health across all age and social groups and an addition to the public health burden. Prolonged exposure to high levels of noise impairs human health and well-being, which is a growing concern for both the public and policymakers*."

It quotes research from Professor Münzel:

"*Noise-induced awakenings can trigger a range of physiological and psychological stress responses because sleep is necessary for hormonal regulation and cardiovascular functioning. There is increasing evidence that traffic noise exposure is a risk factor for the development of cardiovascular and metabolic disorders such as elevated blood pressure, arterial hypertension, coronary heart disease and diabetes. A conservative estimate indicates that long-term exposure to environmental noise contributes to 48,000 new cases of ischemic heart disease and causes 12,000 premature deaths annually in Europe*."

The report cites the WHO 2018 Guidelines:

"*Scientific evidence used in the WHO review, from studies representing numerous regions on different continents, provides the basis for the recommended exposure thresholds. This comprehensive coverage supports adoption of these thresholds to inform noise control policies around the world*."



CONCLUSION

In this report we have outlined serious deficiencies with ANCA's draft decision and the daa's revised application. A project of this magnitude requires a thorough public consultation. 511k people will be exposed to daytime noise levels > 45dB Lden and 268k people exposed to night-time noise >40dB Lnight in 2025 as a result of the 'Relevant Action'. These contours have been identified by the World Health Organisation as noise limits beyond which leads to adverse health effects. This vast number of people need to be properly consulted and informed. Failure by the daa to hold a public consultation is in breach of the North Runway's planning permission conditions. ANCA also failed to engage fully in the consultation process. There were opportunities after the Covid restrictions were lifted to host public events, but they declined to do so. ANCA should publish the figures on the number of people who logged on to their webinars and whether these numbers can be considered as a valid public consultation. As a result of Covid restrictions, a leaflet drop should have been carried out to inform the public. The majority of people in Fingal and Dublin West are either not aware of the consultation process or unable to make sense of the onerous amount of technical detail. Residents are unaware that their houses qualified for insulation under the daa's submission and subsequently removed by ANCA. This is not proper consultation with the people most affected by the daa's proposal.

This application is deficient and flawed on a number of grounds. It does not consider medium to long term forecasts and the impacts of this proposal. The daa have plans to grow the passenger numbers to 40m+ and this application is a classic example of 'project splitting'. The daa are trying to suggest that the noise situation in 2018 was 'acceptable', when the data from the three rounds of the Environmental Noise Directive clearly shows escalating noise. The noise data used in the Dublin Airport Noise Action Plan 2019-2023 is based on noise data from 2016. The daa have publicly acknowledged that the three rounds of the END show a noise problem. ANCA have also acknowledged that a noise problem existed in the three rounds of the END, yet incredibly choose 2019 as the baseline reference year. 2019 was the year that the daa breached the 32m passenger planning cap. ANCA were informed as was Fingal County Council of the impending breach in 2019 yet declined to take any action. ANCA have responsibility for the 32m cap as it's classified as an operating restriction.

This submission includes a health report from one of the foremost authorities, Professor Münzel, on aircraft noise and their effects on the cardiovascular system. His conclusions are that the night-time period from 23:00-07:00 should be protected and that the effects of the Relevant Action will lead to a significant deterioration in the health of the population affected.

The proposal from ANCA and the daa also fails to take account of the communities most affected. It fails to acknowledge and discuss these communities and the devastating impact the airport's operations have had and will continue to impose on these families. They are only referenced as numbers. The EIAR's definition of significant effects fails these communities. ANCA failed to engage medical expertise on their decision-making process. The residents of Fingal and Dublin West are more than just numbers. They deserve a thorough analysis of the health effects of the daa's proposal. The daa have stated that they don't collect material on the health effects of aircraft noise, nor have they conducted any research. ANCA have also failed to produce any evidence that they have engaged medical expertise.

Based on the noise report conducted on properties already insulated by the daa, it clearly shows that noise insulation is not a solution and that the occupants of these properties are at noise exposure levels that are a serious risk to their health. Only a complete ban on night-time flights can safeguard their health.

A serious flaw with this application is that the daa have failed to justify why they need this 'Relevant Action' to cater for 32m passengers by 2025. The existing South Runway catered for 32.9m passengers in 2019. On those grounds alone, the application should be thrown out.

The draft decision outlines how ANCA have accepted almost in its entirety all the proposals from the daa. The only deviation from the daa's submission is the choice of an 8-hour Quota Count System instead of a 6.5 hour one. But even with an 8-hour Quota Count System, ANCA accepted the daa's 16260 count value which ANCA have stated leads to no loss of flights to the daa. The Quota Count System proposed does not have an associated movement limit which is the norm in the UK. The Quota Count System is simply a marketing ploy by the daa that has been accepted by ANCA. ANCA's own analysis shows that the Noise Quota System does not introduce a cost as no flights will be reduced. This is farcical and calls into question ANCA's competence.

ANCA's draft decision will lead to fewer houses being insulated under criteria 2 for night-time insulation. Incredibly ANCA don't even realise this and are publicly acknowledging that their changes to the insulation scheme is better than the daa's proposal. How does less houses included in the insulation scheme improve the scheme?

ANCA are also trying to take credit for imposing a 6-hour restriction on the North Runway at night. An Bord Pleanála already imposed planning condition 3(d) which covers an 8-hour period from 23:00-07:00. ANCA should be transparent with the public and state the obvious, that they reduced the limit from 8 hours to 6.

To understand ANCA's draft decision, one simply has to take a look at the number of people who will be Highly Annoyed, and Highly Sleep disturbed after their decision. 79,405 people will be left Highly Annoyed and 37,080 will be left Highly Sleep Disturbed. The WHO's definition of Highly Sleep Disturbed assigns a disability weighting of 0.07. This means that being Highly Sleep Disturbed due to environmental noise reduces a completely healthy individual's health by around 7%. The disability weight for Highly Annoyed is 0.02 or 2%. ANCA have failed in their draft decision to account for the health costs associated with the daa's proposal. They also fail to take the carbon emissions costs for the increase in aircraft movements that is facilitated by their decision. As a result of ANCA's draft decision there will be a high price to pay for the public both in terms of health and carbon costs that dwarfs any financial or economic gain from additional aircraft activity. The daa's forecast figures show that their proposal will lead to only an additional 2 flights between 06:00 and 08:00 in 2025 compared with restrictions in place. How can an Independent Regulator inflict serious adverse health effects and costs on the population it is mandated to protect for such limited gain? ANCA has not forensically examined the daa's proposal and has effectively rubber stamped it.

The St Margarets The Ward Residents submitted a report previously to the Planning Authority, DAA Report 22.10.2021.pdf, which is included in Appendix A. ANCA needs to explore relocation options with the daa and Fingal County Council for those people most affected by noise and where ANCA's decisions would leave these people vulnerable to the adverse effects of Aircraft Noise. ANCA are responsible for removing the night-time restrictions and therefore the onus is on ANCA to find a safe environment for these people and their families to live. In their current draft decision, ANCA have not explored relocation options or taken on board the

residual health effects and costs associated with their decision. The community has proposed Thornton Hall as such a site that would be acceptable to the community and ANCA need to explore this option in depth.

In conclusion, we call on ANCA and the CEO of Fingal County Council to reject this application by the daa as there's no justification for it except inflicting health costs and carbon costs on the public.

APPENDIX A

DAA Report 22.10.2021.pdf

APPENDIX B

Dublin_Airport_Noise_Medical_Report.pdf

APPENDIX C

HealthEffectsOfAircraftNoiseOnTheCardiovascularSystem.pdf

APPENDIX D

Video - **“Health Effects Of Aircraft Noise on the Cardiovascular System”**

APPENDIX E

NMT 1 2 3 2016 2018 2019 LMAX EVENTS.XLSX

APPENDIX F

HSE.PDF

CONTRIBUTORS

Pearse Sutton
Chartered Engineer
BSc(Eng), CEng, Dip Struct Eng, FIEI, FIStructE, MAPEGS, PEng, FConsEI, Dip Env Eng, Eur Ing, LEED AP

Cora Sutton-Smith
MSc Planning & Development
MSc, Cert Proj. Mgt., BA Science

Liam O'Gradaigh
BEng, MEng

Univ.-Prof. Dr. med. Thomas Münzel,

Center for Cardiology - Cardiology I, University Medicine of Johannes Gutenberg-University of Mainz