S. 37

File With _____

SECTION 131 FORM

Appeal NO:_ABP 314485-22 **Defer Re O/H** ☐

Having considered the contents of the submission dated/ received 13/12/2023 from

SMTW Environmental DAC I recommend that section 131 of the Planning and Development Act, 2000 be/not be invoked at this stage for the following reason(s):. (Inspector to advise

E.O.: Pat B **Date:** 03/01/2024

For further consideration by SEO/SAO

Section 131 not to be invoked at this stage. ☐

Section 131 to be invoked – allow 2/4 weeks for reply. ☐

S.E.O.: _____ **Date:** _____

S.A.O: _____ **Date:** _____

M _____

Please prepare BP _____ **- Section 131 notice enclosing a copy of the attached submission**

to: _____ **Task No:** _____

Allow 2/3/4weeks – BP_____

EO: _____ **Date:** _____

AA: _____ **Date:** _____

SMTW Environmental DAC
C/o Liam O'Gradaigh,
Ward Cross, The Ward,
Co. Dublin

The Secretary
An Bord Pleanála
64 Marlborough Street
Dublin 1
D01 V902
10th December 2023

LDG-
ABP-
13 DEC 2023
Fee: € Type:
Time: 14:11 By: Hand

RE: FURTHER INFORMATION PROVIDED TO AN BORD PLEANALA BY THE DAA ON PLANNING APPLICATION F20A/0668

Dear Sir/Madam,

We welcome the letter from An Bord Pleanála, dated November 8th, 2023, requesting written submissions on the further information request from the Board to the daa. We note the information provided by the daa was deemed '*significant*'. As appellants we had requested an Oral Hearing and were very disappointed not to have been afforded one. We again make a request for an Oral Hearing given the significant new information presented to the Board and to the public. This information is highly complex.

We also note our disappointment that the Board didn't facilitate requests from the public for an extension of the 5-week period in which to respond. The daa were facilitated 16 weeks to prepare their material and they used that time to add entirely new material to the file, instead of responding to just the questions raised by the Board. The information provided in relation to the questions raised did not require 16 weeks to prepare and the daa used the time given to prepare effectively a new EIAR. Therefore, it is understandable that the public feel aggrieved not to be given sufficient time to analyse the information in the run up to Christmas.

The significant information provided by the daa, including the revised EIAR Supplement, fails to address the main points raised by the appellants in their appeals. Below is a list of some of the main issues, each of which on their own would suffice for the proposal to be refused. However, it's the combination of all these flaws in the proposal that makes it impossible for this application to be approved or amended in any way. The Board has no alternative, given how grave the issues are, but to refuse permission.

We understand that this case is highly complex and requires forensic technical skills to decipher. But the planning law, environmental law and planning guidelines are quite clear of what is expected of a major application such as this. We are very disappointed that the CEO of the daa has declined invitations to personally meet with residents' groups. The local

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We understand that this case is highly complex and requires forensic technical skills to decipher. But the planning law, environmental law and planning guidelines are quite clear of what is expected of a major application such as this. We are very disappointed that the CEO of the daa has declined invitations to personally meet with residents' groups. The local

community wants to work in harmony with the Airport, but the current approach adopted by the new CEO doesn't lend itself to mediation.

Notwithstanding the complexity of this application, we urge the Board to make a swift decision on this case. The local communities are suffering severe physical health, mental health and emotional health issues in relation to ongoing breaches by the daa of planning conditions imposed by the Board in 2007 when granting permission for the North Runway.

In our appeal to the Board, we provided expert evidence from Professor Thomas Münzel, a world-renowned expert in environmental noise and the effects on the cardiovascular system, who highlighted the severe health implications for breaching the WHO safe limits. In this submission we also include a technical note from Dr Niamh Maher and Dr. John Garvey to elaborate on this point and refer to the new information submitted by the daa.

Our submission also includes an assessment from Mr Hendrik W van der Kemp, Town Planner, of the significant additional information. His report outlines severe issues with the additional information provided from a planning perspective.

An aviation noise review has been prepared by Ben Holcombe of Suono in addition to extensive long term noise monitoring carried out by our group at several locations affected by North Runway operations. These documents demonstrate significant failings by the applicant in their noise assessments including major concerns regarding the accuracy of noise contours produced.

The structure of the submission is as follows:

Appendix 1 – Report from Hendrik W van der Kemp on planning matters relating to the response to the RFI and supplementary EIAR.

Appendix 2 – SMTW Environmental DAC's response to the RFI and supplementary EIAR.

Appendix 3 – Aviation Noise report by Suono and monitoring reports for the noise measurements taken in our community during the summer of 2023.

Appendix 4 – Health related report by Dr John Garvey responding to the RFI and supplementary EIAR.

Appendix 5 – Environmental Assessment Report from Sabrina Joyce-Kemper.

A short summary of the main points presented in each document are presented below:

Planning Report

- Deleting or amending conditions 3.d and 5, crucial to the planning permission for the Northern Runway, without a comprehensive review, is deemed concerning.
- The Environmental Impact Assessment Report (EIAR) supplement introduces different flight path assumptions than those in the original planning application, potentially altering the distribution of noise impacts and additional awakenings. The applicant's response fails to acknowledge this discrepancy.
- The report anticipates a significant increase in additional awakenings by the year 2035 if the proposed changes to conditions 3.d and 5 are implemented.
- Sensitivity testing results for noise contours, area coverage, and sensitive receptors are considered unreliable, as they are based on different flight paths than those in the original 2004 EIAR, undermining the accuracy of noise impact estimates.
- The rationale for not using 2019 as a baseline year and other questions related to base years are not sufficiently addressed in the response to the Board.
- The adoption of different flight paths in the EIAR Supplement is expected to impact noise contours compared to the 2004 EIAR, which served as the foundation for the planning permission.
- The proposed development introduces noise contour zones near rural villages inconsistent with the noise zones designated in the Fingal Development Plan.
- Changes in flight paths appear to violate the existing planning permission, specifically condition 1, as the operation of runways no longer aligns with the EIAR. No revised planning application for this alteration has been granted permission.

SMTW Environmental DAC

- The amendment of the two operating restrictions requires a full planning application to adequately assess their impacts. These conditions were attached by the Board to overcome the Inspector’s decision to refuse permission.
- New flight paths adopted by the daa in contravention of the 2007 planning permission and affecting a whole new cohort of people that wasn’t assessed by the 2007 permission. This is in contravention of Condition 1 of 2007.
- The new noise contours produced as a result of the divergent flight paths contravenes the Noise Zones in the Fingal Development Plan.
- Failed to adequately assess Significance of effects and the implications on those residents most impacted.
- New flight paths acknowledged by the daa yet not stated on the Public Notice for the Relevant Action or on the Public Notice from An Bord Pleanála.
- Green House Gas Emissions (GHG) are not properly assessed, and evidence is provided to show that these are very significant.

- The health impacts of nighttime noise have not been assessed by the applicant or ANCA.
- The proposal fails to address the strong recommendations by the WHO.
- The proposal has failed to take into account the numerous submissions from the HSE and Fingal's Environmental Health section.
- The health costs and other negative impacts of increased aviation activity have not been properly assessed.
- The AA assessment by the applicant and the AA assessment from ANCA fail to assess the impacts on the Red Kite, which is an Annex I species.
- The proposal is contrary to the objectives of Project Ireland 2024 and Balanced Regional Development.
- A full NIS was never carried out on the North Runway.
- Dublin Airport failed the Noise Abatement Objective (NAO) in 2022.
- The NAO uses a flawed year of 2019 as its Baseline. In 2019, Dublin Airport facilitated 32.9m passengers, breaching the planning condition of 32m imposed by An Bord Pleanála.
- The Baseline year for the NAO should be in line with the EU Action Plan 'Towards a Zero Pollution for Air, Land and Soil', which refers to 2017.
- The daa are on course to breach the 32m cap again in 2023 even though they were given full warning by Fingal County Council in in a pre-planning meeting in 2020 on their interpretations of passenger types and numbers.
- Fingal County Council has taken enforcement proceedings against the daa for breaching Condition 5 (65 nighttime flights) on the North Runway's planning conditions imposed by An Bord Pleanála.
- Based on the revised EIAR Supplement, in 2025 Proposed:
    - 326k people above the WHO 45dB Lden limit
    - 168k people above the WHO 40dB Lnight limit
    - 23,844 people Highly Sleep Disturbed
    - 53,854 people Highly Annoyed
    - 9,380 people are significantly adversely affected, 553 very significantly affected and 176 profoundly affected at night.
    - 6,805 more people subjected to > 50 N60 noise events compared to 2025 Permitted.

<u>Aviation Noise Report</u>

- The significance criteria used by daa in their EIAR supplement are not in line with the criteria used for recent airport developments in the UK and those proposed by the daa are likely to underestimate the effect.

- No significance criteria is assigned to the additional awakenings metric that the RFI asks for despite there being adopted criteria in UK airport expansion schemes that could have been used
- No graphical representation of where additional awakenings is provided which limits the understanding of where impacts will occur.
- The developer is not suggesting any measures, operational controls or limitations to guarantee any reduction in noise. Consequently, the provided information may underestimate the aviation noise impact on local communities.
- Baseline measurements are now considered to be out of date and the developer has not sought to update them.
- There is a lack of monitoring in the areas most affected by the proposed development.
- There are concerns about the validation of northern runway movements in the context of uncertain flight paths. Only one portable noise monitor has been used under north runway flight paths. Despite the applicants focus on increasing movements on the north runway, there is limited attention to ensuring the accuracy of this aspect in the noise model.
- The proposed insulation scheme is insufficient to ensure that all significant effects are avoided, prevented or reduced.
- Updated air noise model now shows noise contours are significantly different to those in the permitted scheme from 2007.
- Updated air noise model now shows noise contours will not be contained within the Dublin Airport Noise Zones which form part of the Fingal Development Plan
- Introduction of a Noise Quota without an associated movement limit is in appropriate and does not present any consideration to limiting night flights at all.

<u>Health Report</u>

- The WHO Environmental Noise guidelines 2018 need to be updated.
- Since 2018 there is increasing evidence supporting the adverse effects of aircraft noise, nighttime noise in particular, on health.
- The effects of aircraft noise on the cardiovascular system are indisputable and it can exacerbate preexisting cardiovascular disease.
- Nighttime aircraft noise has even worse implications for health than that during the day. The vulnerable in society are more susceptible.
- Aircraft noise can have statistically proven long term and permanent effects on our children's academic performance, mental and physical well-being.
- Sleep is disrupted by aircraft noise. The pattern and frequency of aircraft noise renders it more likely to cause sleep disturbance.

- There is no fleet movement limit in the proposed noise quota. This has the potential to allow increased movements, which would in turn worsen the noise problem and sleep disturbance for those living under these flight paths, due to the nature of aircraft noise.
- There is an admitted change in flight paths off the north runway. The shoulder hours of sleep will be significantly adversely affected by the proposed changes to the hours of use of the north runway. This increased 2 hours involves flight paths over predominantly unmitigated homes in the vicinity of the airport.
- The diluted manner in which the increased probability of awakenings is presented undermines the true magnitude of the nighttime noise effect on those that will be at least significantly affected.

In conclusion, planning is an afterthought for the daa. Their actions show they do not respect the decisions of the Board. It is 16 months now since the North Runway opened. Fingal County Council has taken enforcement proceedings against the daa in relation to the breach of Condition 5 (65 nighttime flights). The Council is also investigating the alleged illegal divergent flight paths off the North Runway. Unfortunately, for residents, the Council seems incapable of coming to a decision and appears to be waiting on the Board's decision in this Relevant Action application. It is therefore of upmost importance that the Board makes a decision in a timely manner to refuse permission for the Relevant Action application.

Yours sincerely,

Liam O'Gradaigh
On behalf of SMTW Environmental DAC

Our Case Number: ABP-314485-22

Planning Authority Reference Number: F20A/0668

An Bord Pleanála

SMTW Environmental DAC
c/o Ward Cross
The Ward
Co. Dublin

Date: 08 November 2023

Re: A proposed development comprising the taking of a 'relevant action' only within the meaning of Section 34C of the Planning and Development Act 2000, as amended, which relates to the night-time use of the runway system at Dublin Airport.
Dublin Airport, Co. Dublin

Dear Sir / Madam,

Further to the Board's letter of 3rd October 2023 in which you were informed that the Board had received significant further information from the applicant in relation to the above appeal, the Board is publishing a newspaper notice in accordance with Article 113 of the Planning and Development Regulations, 2001 (as amended). The notice will be published in the Irish Times newspaper on 10th November 2023.

This notice will enable written submissions in relation to the further information to be made to the Board **within 5 weeks** beginning on the date of publication of the notice. The further information will be available for inspection and purchase at the offices of Fingal County Council and An Bord Pleanála. The further information will also be posted on the website of An Bord Pleanála at www.pleanala.ie/en-ie/case/314485.

As you are an existing participant in this appeal, there is no requirement for you to pay a fee when submitting any further submission you may wish to make in this case.

Please contact the undersigned if you need any further information in respect of this process and quote the above appeal reference in any further telephone or written correspondence.

Yours faithfully,

pp Patrick Buckley
Executive Officer
Direct Line: (01) 8737167

BP77

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APPENDIX 1

Report from Hendrik W van der Kemp on planning matters relating to the response to the RFI and supplementary EIAR

Hendrik W van der Kamp, MScEng, FIPI, MIEI
Town Planner
1, Woodstown Court
Knocklyon
Dublin 16
Tel: 087 2020387 E-mail: hendrikwvanderkamp@outlook.com

Observation on Additional Information Submitted on 14th September 2023 in relation to the application for a Proposed Relevant Action under Section 34C of the Planning and Development Act, 2000 (as amended).

This observation is in response to the invitation for submissions or observations in relation to Additional Information that has been submitted on behalf of the applicants in relation to an application for a Relevant Action under Section 34C of the Planning and Development Act, 2000 (as amended).

The application has pl. ref. no. **F20A/0668**, appeal reference **ABP-314485-22**.

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1 Introduction

This observation is in response to the invitation for submissions or observations in relation to Additional Information that has been submitted on behalf of the applicants in relation to an application for a Relevant Action under Section 34C of the Planning and Development Act, 2000 (as amended). A decision to grant permission for this application has been appealed to An Bord Pleanála.[1]

The additional information that has been submitted by the applicants is in relation to an application for a Proposed Relevant Action (S.34C of P&D Acts) to amend/replace operating restrictions set out in conditions no. 3(d) & no. 5 of the North Runway Planning Permission (ABP Ref. No.: PL06F.217429) as well as proposing new noise mitigation measures at Dublin Airport, Co. Dublin.

The request for additional information addresses three items. It is noted however, that independent from and in addition to, the response to these three items of further information, the applicants have submitted a revision to the Environmental Impact Assessment Report (EIAR) referred to as the EIAR Supplement.

Fingal County Council in its role as planning authority has made a decision to grant permission for the relevant action. However, in addition Fingal County Council is tasked with the assessment of noise in relation to the airport: …"*Fingal County Council has been designated as the Aircraft Noise 'Competent Authority' (ANCA) for the purposes of monitoring Aircraft Noise levels at Dublin Airport. As such, all planning applications at Dublin Airport are referred to the Competent Authority by the Planning Authority for assessment. In assessing a planning application, ANCA must determine whether the proposals have the potential to cause a noise problem. The assessment role includes an examination of planning applications by the Competent Authority to ascertain whether they could have aircraft noise implications which require mitigation*."[2]

This observation addresses in section 2 the nature of the proposed Relevant Action and the planning history preceding it. Section 3 questions the rationale for the Relevant Action which relates to the operation of Dublin Airport during nighttime hours. Sections 4-6 address the additional information in relation to the three issues raised. Sections 7 and 8 address the EIAR Supplement that has been submitted by the applicants with the additional information. Sections 9 and 10 address the planning status of the current operation of the airport flight zones in relation to the planning permission granted and the development plan noise zones. Section 11 sets out the conclusions of this observation.

2 Proposed Development

Planning permission for the North Runway at Dublin Airport was granted in 2007.[3] An Extension of Duration Permission was granted in 2017 extending the life of the planning permission to August 2022.[4] As part of the planning application an Environmental Impact Statement was prepared. This report was dated 2004 and is referred to here as the **2004 EIS**.

[1] Planning ref. F20A/0668, appeal reference ABP-314485-22
[2] *Fingal Development Plan 2023-2029*, p. 326.
[3] Planning ref. F04A/1755, appeal reference PL 06F.217429.
[4] Planning ref. F04A/1755/E1

In Appendix G9 of the document it is stated that "*For the new 10/28 runway it is assumed that aircraft using this will follow similar flight tracks to those for the existing runway*."[5]

The planning permission was amended by pl. ref. F19A/0023 appeal ref. ABP-305289-19. This permission was to amend the design of the Northern Runway.

The North Runway Relevant Action application was lodged on 18/12/20 and comprises …"*a proposed development comprising the taking of a 'relevant action' only within the meaning of Section 34C of the Planning and Development Act 2000, to amend/replace operating restrictions set out in conditions no. 3(d) and no. 5 of the North Runway Planning Permission (…) as well as proposing new noise mitigation measures*".[6]

Condition 3d states effectively that the Northern Runway shall not be used between 23.00 and 7.00 hours. Amendment is sought to change the restriction to between midnight and 6.00 in the morning.

Condition 5 states effectively that the average number of nighttime air traffic movements (ATMs) shall not exceed 65. Amendment is sought by replacing this restriction on the number of ATMs by a noise quota.

A decision to grant permission was made by Fingal County Council on 8/8/22. This decision is currently on appeal with An Bord Pleanála.

Although the Relevant Action only relates to conditions 3 and 5 of the planning permission, an updated EIAR was submitted with the Relevant Action application. This is referred to here as the **2020 EIAR**. Noise contours are shown in this EIAR in chapter 13. This EIAR was amended in response to a further information request from the planning authority which resulted in a 2021 date and therefore the final EIAR relevant to this application is the **2021 EIAR**.

The Northern Runway opened in August 2022. However, since the Northern Runway has been in use, the flight paths that are used are not straight out but instead curved in northern direction. Such flight paths produce different noise contours and these different noise contours are clearly visible from the current Relevant Action Application.

3 Rationale for the Application

This submission is primarily in response to the additional information that has been provided by the applicant in response to the request from the Board. However, the question must be asked what the rationale is for the proposed deletion of two conditions that have been attached to the existing planning permission. While this is not explicitly stated as such, it is understood from the content of the covering letter with the Relevant Action application that the increase in air traffic is the main reason for seeking the changes to the existing planning permission. In support of the application, the applicant has submitted detailed information referring to increases in air traffic movements.

However, to delete or amend two conditions attached to the planning permission for the airport operation without reviewing the planning permission in full, is a matter of concern. It is considered inherently risky to make changes to an existing planning permission that was

[5] *Environmental Impact Statement*, December 2004, Appendix G, page G-314.
[6] Planning application form pl. ref. F20A/0668, section 9, datestamped 18/12/20.

reached following comprehensive consideration of all issues relevant to the application. In the case of the subject application, the inspector recommended refusal of planning permission, but the Board decided to grant permission. In coming to this decision, the Board in particular referred to the restriction on nighttime aircraft movements by way of condition.[7] It can therefore be assumed that attaching these conditions was a critical aspect of the decision to grant planning permission. The Board in its decision also referred to the Environmental Impact Statement and the planning permission states that development and operation of the airport shall be in accordance with the details as contained in the 2004 EIAR.[8]

In the current application, the applicant has provided a different Environmental Impact Assessment Report using different flight paths in its noise assessment calculations, by submitting the 2020/2021 EIAR to replace the 2004 EIS on which the Board's decision was based and by further amending sections of that updated EIAR by submitting an Addendum document. This kind of piecemeal altering of the documentation that formed part of the original parent planning permission, is, while well intended, inappropriate as the holistic nature of the EIA process is at risk, while the consideration by the Board in granting the parent planning permission is challenged in part.

Removing or altering a condition on a planning permission is therefore an inappropriate course of action in planning terms. Where it is found that a planning permission no longer covers the activities that the applicant is seeking to carry out, a fresh application should be submitted for consideration. The core issue of concern in this submission illustrates this point very well. The applicant, by their own submission, has altered the flight paths that formed the basis of the noise assessment in the original EIS. This alteration had resulted in different noise contours which bring in different dwelling units and population.

4 Item 1: Impact of Noise Levels on Sleep

Item 1 of the further information request addresses the need for the applicant to assess the *probability of awakening during nighttime hours*.[9] This assessment must include baseline conditions as well as the future operation of the airport proposed under the current application.

In response, the applicant has submitted a report which has determined the probability of additional awakenings …"*for the population in the same study area as the EIAR Supplement, which contains over 1 million people*."[10] However, the EIAR supplement has adopted different flight path assumption to the ones used in the planning application on which the permission is based. In terms of the population in the study area, the report ignores the fact that a different distribution of noise impacts results from the change in flight paths from the original planning permission and therefore the pattern of additional awakenings is also likely to be distributed in a different pattern than as permitted under the planning permission.

Again, it is relevant to note that the decision to grant planning permission for the northern runway was made on the explicit understanding that: …"*there would be no significant deterioration in noise conditions at night time in the vicinity of the airport due to the proposed Option 7b operating mode for the runways (non-use of new runway and of cross runway at*

[7] An Bord Pleanála Order PL06F.217429, 29/8/07, page 3.
[8] An Bord Pleanála Order PL06F.217429, Condition 1.
[9] An Bord Pleanála request for further information dated 27/4/23.
[10] *Noise Modelling Report Abp Rfi 27 Apr 2023*, Bickerdike Allen Partners, September 2023, p. 4.

night) and the restriction on night time aircraft movements by way of condition."[11] The introduction now of different flight paths that would introduce noise levels for a new category of residents, runs counter to this understanding.

A main concern is that the number of people that are affected by aircraft noise, may have increased compared to the original EIAR modelling in the 2004 EIAR as a result of different flight paths being followed. This can be illustrated by the fact that the noise contours now fall outside the noise zones of the Development Plan[12]. See fig. 1 which shows that the noise contours resulting from the relevant action application are no longer consistent with the noise zones as defined on the recently adopted Development Plan Map.

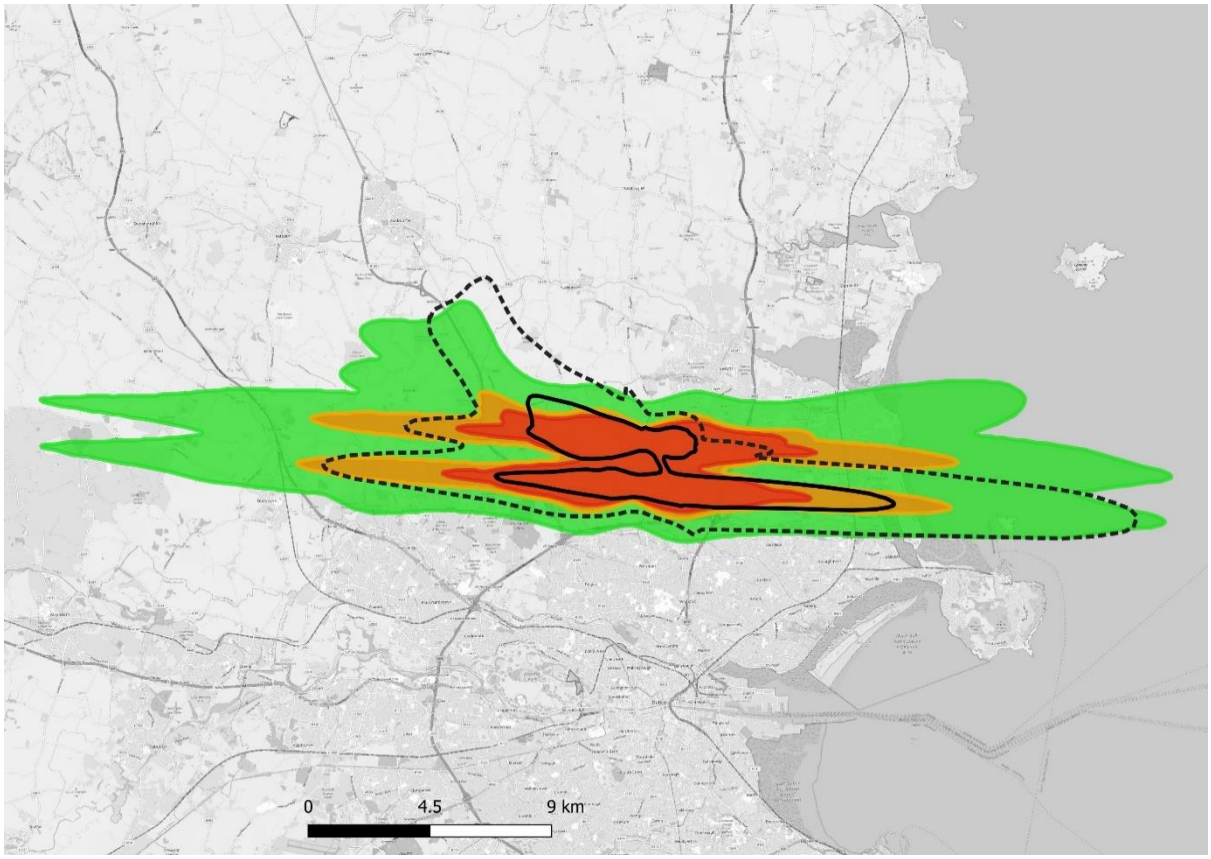


Fig. 1 – Comparison of Noise Contours with Development Plan Noise Zones

The figure shows the extent of the 55dB Lnight contour (solid black line) which now does not fall completely within Noise Zones A (red) and B (orange). Similarly the 48dB Lnight contour (dashed line) no longer falls within the confines of Noise Zone C (green).

The report concludes that significant additional awakenings would result by the year 2035 under the proposed changes to conditions 3.d and 5 of the planning permission. These changes can be summarised as follows.

[11] An Bord Pleanála Order PL06F.217429, page 3.

[12] Compare figures 01-016 of the Noise Modelling Report with the Noise Zones as shown on *Fingal Development Plan 2023-2029,* Sheet no. 1.

Nightly Additional Awakenings	2035 permitted	2035 proposed	Source
Nightly Additional Awakenings based on Annual Average	16,087	20,536	Table 1
Nightly Additional Awakenings based on Summer Average	18,062	23,074	Table 2
Nightly Additional Awakenings based on Annual Average – Easterly Operations	20,849	33,089	Table 3
Nightly Additional Awakenings based on Annual Average – Westerly Operations	14,075	15,801	Table 4
Nightly Additional Awakenings based on Summer Average – Easterly Operations	23,409	37,179	Table 5
Nightly Additional Awakenings based on Summer Average – Westerly Operations	15,803	17,754	Table 6

Table 1 – Nightly Additional Awakenings as per Noise Modelling Report[13]

5 Item 2: Future Population Numbers Affected by Aircraft Noise

Item 2 of the further information request addresses the need for the applicant to provide results of *sensitivity testing of: (i) noise contours, (ii) area covered, and (iii) number and type of sensitive receptors*.[14]

In response, the applicant has submitted a series of figures which show the noise contours under the permitted and proposed scenarios. However, the report states that for preparing these noise contours …"*the number of dwellings and the estimated population that they contain have been determined as described in replacement chapter 13 of the EIAR Supplement*"[15] However, therein lies the problem because the chapter 13 of the EIAR Supplement is based on *different flight paths* than those contained in the original 2004 EIAR.

The results prepared include noise contours, their areas, and the sensitive receptors they contain, both residential and other noise sensitive buildings.[16] Please note that the noise contours are based on different flightpaths than those on which the permission is based. This is clear from the response letter which lists five principal changes that are addressed in the EIAR Supplement that has been submitted with the additional information. The first of these principal changes is stated as: …"*Actual flightpaths from North Runway upon commencement differing from assumed flightpaths used for modelling/assessment purposes in the previous EIARs*."[17]

[13] *Noise Modelling Report Abp Rfi 27 Apr 2023*, Bickerdike Allen Partners, September 2023, Tables 1-6.
[14] An Bord Pleanála request for further information dated 27/4/23.
[15] *Noise Modelling Report Abp Rfi 27 Apr 2023*, Bickerdike Allen Partners, September 2023, p. 14.
[16] Further Information Response Covering Letter, Tom Phillips and Associates, 14/9/23, p. 14.
[17] Further Information Response Covering Letter, Tom Phillips and Associates, 14/9/23, p. 9.

As a result, the sensitivity testing does not provide an accurate and realistic estimate of noise impacts of the different scenarios tested as it does not use the original permission as a baseline.

6 Item 3: Baseline Years Used

Item 3 of the further information request addresses the need for the applicant to clarify the *choice of 2018 as a baseline year* used in the Environmental Impact Assessment and the likely noise impacts at night on the people and dwellings in the area if the *numbers of ATMs were more than 25% below those in 2018*.[18]

In response, the applicants state that information on past activity, both in 2018 and 2019 was included in the 2020 EIAR.[19] However, no clarification is provided why 2019 was not used as a baseline year for the purpose of analysis even though this was the clear question asked by the Board.

The additional information that was submitted in response to item 3c of the further information request demonstrates the significance of the proposed changes on the number of dwellings and population affected. As the report shows, in comparison with the terms of the existing planning permission, a more than fivefold increase in the population within the 55 Lnight (dB) contour would result if the changes were accepted. See table 2.

	2025 Permitted	2025 Proposed	2025 Proposed Reduced	2035 Permitted	2035 Proposed	2035 Proposed Reduced
Dwellings	115	466	78	79	372	47
Population	315	1463	233	212	1197	145

Table 2 – Dwellings and Population Within 55 Lnight (dB) Contour[20]

7 Issues in Relation to the EIAR Supplement

In addition to the response to the three items of further information that were requested by the Board, the applicants have also submitted a revision to the EIAR referred to as the EIAR Supplement.

It is stated that the EIAR Supplement is based on: …"*Actual flightpaths from the new North Runway upon commencement differing from assumed flightpaths used for modelling/assessment purposes in the previous EIARs*."[21]

While this update is welcomed in the sense that it reflects reality and therefore a proper basis for modelling of future impacts, it is considered that the different flightpaths will have a consequence for the noise contours, compared to the 2004 EIAR that formed the basis for the

[18] An Bord Pleanála request for further information dated 27/4/23.
[19] *Noise Modelling Report Abp Rfi 27 Apr 2023*, Bickerdike Allen Partners, September 2023, p. 31.
[20] Source: *Noise Modelling Report Abp Rfi 27 Apr 2023*, Bickerdike Allen Partners, September 2023, Tables 42, 43, p. 33.
[21] Further Information Response Covering Letter, Tom Phillips and Associates, 14/9/23, p. 9.

planning permission. These noise contours affect dwellings and people that were not considered in the 2004 EIAR because of the different flightpaths.

The EIAR Supplement that has now been submitted with the additional information response makes it clear that the flightpaths used are different to those used in the 2004 EIAR that forms the basis for the planning permission for the Northern Runway. The EIAR Supplement report refers to three key sources of information used for the assessment of the noise effects. These are: (i) the physical location of the runway system, (ii) the flight paths (in particular for departures) and (iii) the number and type of flights including aircraft type.[22] The source of information to determine the flight paths is stated as follows: …"*This information for existing routes has been taken from a combination of the Aeronautical Information Publication (AIP) for Ireland and an inspection of actual aircraft flight paths using the airport's Noise and Flight Track Monitoring System (NFTMS)*."[23]

There is therefore no reference to the fact that these flight paths may be different to the flight paths on which the original EIAR was based that formed the basis for the planning permission for the Northern Runway. This is significant because the existing planning permission states in condition 1 that the operation of the airport runway must be in accordance with the EIAR, i.e. the 2004 EIAR.[24]

8 Residual Impacts on Residential Amenity and Mitigation Measures

The EIAR accompanying the application for Relevant Action states in Chapter 13 the following in relation to mitigation: …"*In addition to the mitigation measures already in place at Dublin Airport, as part of this application the Applicant is proposing to adopt the mitigation measures and controls as follows: An Annual Noise Quota (ANQ) system to replace the limit of 65 flights per night*..."[25] The replacement of the limit of 65 flights per night by an annual noise quota system, is part of the application for the Relevant Action as the limit of 65 flights per night is a condition on the planning permission (condition 5) which is sought to be removed. This can therefore not be described as a mitigation measure. For the same reason, noise monitoring cannot be described as a mitigation measure.

Concerns remain that adequate recourse to mitigation of residential impacts is not spelled out sufficiently in the EIAR Supplement.

9 Planning Status of Rural Villages

The Fingal County Development Plan identifies a number of rural villages as part of the settlement hierarchy. It is an objective of the Development Plan to: …" *Manage the development of Rural Villages within the RV boundaries and strengthen and consolidate their built form providing a suitable range of housing as an alternative to housing in the open countryside*."[26] Four of these villages are located within the Metropolitan Area. These metropolitan Rural Villages comprise Coolquay, Kinsaley, Rivermeade, Rowlestown.[27] Three of these four villages (Coolquay, Kinsealy and Rivermeade) are located either partly or

[22] *Environmental Impact Assessment Report Supplement*, 2023, p. 13-4.
[23] *Environmental Impact Assessment Report Supplement*, 2023, p. 13-4.
[24] An Bord Pleanála Order PL06F.217429, Condition 1.
[25] *Environmental Impact Assessment Report*, p. 13-36.
[26] *Fingal Development Plan 2023-2029*, Objective CSO68, p. 101.
[27] *Fingal Development Plan 2023-2029*, p. 141.

completely within the Air traffic noise zones as identified in the Development Plan. However, while a small part of the zoned lands of Kinsealy village are located within Airport Zone B, most of Rivermeade and all of Coolquay are within Airport Zone C which is based on lower aircraft noise than zones A and B.

The proposed development appears to introduce noise contour zones in proximity of the rural villages that are appropriate to noise zones B or A while the development plan policy has identified that the noise zones for these villages are generally noise zone C (with the exception of a small section of zoned land in Kinsealy village).

The Fingal County Development Plan was adopted in 2023. It can be assumed that in setting out the Noise Zones A, B and C in the plan, account was taken of the planning permission that was granted for the Northern Runway. These noise zones are all running in east-west direction in the cone shape form based on the flight paths 'straight out' from the direction of the runways for a distance before diverging.[28] In contrast, the noise contours submitted by the applicant in response to the additional information request, show noise contours that are running in north south direction. Please refer to figures 01-016.[29]

The effect of this anomaly is that for the southern runway the area within the 60-64 dBA contour is entirely within Noise Zone B and subject to restrictions for development for that noise zone, while for the northern runway the area within the 60-64 dBA contour covers villages Coolquay and Rivermeade that are according to the Fingal Development plan in part (in the case of Rivermeade) or in total (in the case of Coolquay) in Noise Zone C with less onerous development restrictions. As both settlements are designated in the Development Plan as Rural Villages, this contradiction between the noise contours as submitted in the response to the additional information request and the Development Plan noise zones, can clearly not be correct in planning terms.

10 Planning Status of Existing Operation of the Northern Runway

The Northern Runway opened in August 2022. However, since the Northern Runway has been in use, it appears to the appellants that the flight paths that are used are not straight out but instead curved in northern direction. The EIAR Supplement that has been submitted by the applicant as part of the response to the additional information request, confirms this fact. These different flight paths produce different noise contours and these different noise contours are clearly visible from the current application. It is acknowledged in the EIAR that was submitted with the Relevant Action Application, that the flight paths used to assess noise impacts, are not those used in the original EIAR but rather on different sources that reflect actual flight paths used. However, while this may better represent reality than the original EIAR, the original EIAR has a specific significance in relation to the planning consent as it is referred to in condition 1 of the planning permission. This condition states the following:

"*1. The development shall be carried out in accordance with the plans and particulars and the Environmental Impact Statement lodged with the application as amended by the further plans and particulars received by the planning authority on the 9 th day of August, 2005, including the Environmental Impact Statement Addendum, and the 3rd day of March, 2006 and received by An Bord Pleanála on the 30 th day of August, 2006, the 5th day of March, 2007 and in the*

[28] *Fingal Development Plan 2023-2029,* Sheet no. 1.
[29] *Noise Modelling Report Abp Rfi 27 Apr 2023,* Bickerdike Allen Partners, September 2023

oral hearing, except as may otherwise be required in order to comply with the following conditions. Reason: In the interest of clarity." [30]

It would appear to be the case that this change in flight paths has resulted in a breach of the existing planning permission in that the applicants can no longer satisfy condition 1 of the planning permission in that the operation of the runways is not as per the EIAR. No revised planning application to change the flight paths has been granted permission.

11 Conclusions

- **To delete or amend conditions 3.d and 5 that are attached to the planning permission for the airport operation without reviewing the planning permission in full, is a matter of concern. Attaching the conditions was a critical aspect of the decision by An Bord Pleanála to grant planning permission for the Northern Runway.**

- **The EIAR supplement has adopted different flight path assumption to the ones used in the planning application on which the permission is based. This results in a distribution of noise impacts that is different from the original planning permission. As a result, the pattern of additional awakenings is also likely to be distributed in a different pattern than as permitted under the planning permission. The response by the applicant fails to point this out.**

- **The report concludes that significant additional awakenings would result by the year 2035 under the proposed changes to conditions 3.d and 5 of the planning permission.**

- **The results of the sensitivity testing of: (i) noise contours, (ii) area covered, and (iii) number and type of sensitive receptors, are not reliable as the number of dwellings and the estimated population that they contain is based on different flight paths than those contained in the original 2004 EIAR. As a result, the sensitivity testing does not provide an accurate and realistic estimate of noise impacts of the different scenarios tested as it does not use the original permission as a baseline.**

- **No rationale appears to be given to the question from the Board why 2019 was not used as a baseline year. Also other questions re the base years are not responded to in detail.**

- **It is considered that the different flightpaths that have been adopted in the EIAR Supplement will have a consequence for the noise contours, compared to the 2004 EIAR that formed the basis for the planning permission.**

- **The proposed development appears to introduce noise contour zones in proximity of the rural villages that are appropriate to noise zones B or A while the development plan policy has identified that the noise zones for these villages are generally noise zone C.**

[30] An Bord Pleanála Order PL06F.217429, Condition 1.

- **The change in flight paths appears to have resulted in a breach of the existing planning permission in that the applicants can no longer satisfy condition 1 of the planning permission in that the operation of the runways is not as per the EIAR. No revised planning application to change the flight paths has been granted permission.**

APPENDIX 2

St Margarets The Ward Residents Group response to the RFI and supplementary EIAR



Submission on behalf of SMTW Environmental DAC

TO FURTHER INFORMATION REQUEST FROM AN BORD PLEANALA DATED NOVEMBER 10TH 2023

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APPENDIX C: **HSE2.pdf**

APPENDIX D: **HSE-DeptOfPublicHealth.pdf**

APPENDIX E: **Fingal-EnvironmentalHealth.pdf**

APPENDIX F: **HSE Submission re Proposed Material Alterations Dec 22.pdf**

APPENDIX G: **20230508 AirNav Ireland response to Department of Transport.pdf**

APPENDIX H: **Pre-planning_25-02-2020.pdf**

APPENDIX I: **Pre-planning_02-10-20219.pdf**



SUBMISSION ON BEHALF OF SMTW ENVIRONMENTAL DAC

SUBMISSION DOCUMENTS

Included in this submission are:

HSE.pdf

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

Environmental Health Submission Feb 2022.pdf

Submission by the HSE Environmental Health section to ANCA, dated February 24th, 2022.

HSE2.pdf

Submission by the HSE Environmental Health section to the Planning Authority for Planning Application F20A/0668, dated September 29th, 2021.

HSE-DeptOfPublicHealth.pdf

Submission by the HSE Department of Public Health to the Planning Authority for Planning Application F20A/0668, dated February 1st, 2021.

Fingal-EnvironmentalHealth.pdf

Submission by the Fingal Environmental Health Air & Noise Unit dated October 15th, 2021.

HSE Submission re Proposed Material Alterations Dec 22.pdf

Submission by the HSE Public Health Area A on the Proposed Material Alterations of the Fingal Development Plan 2023 – 2029

20230508 AirNav Ireland response to Department of Transport.pdf

Response to query from Department of Transport from AirNav Ireland on North Runway Flight Paths

Pre-planning_25-02-2020.pdf / Pre-planning_02-10-20219.pdf

Pre-planning documents detailing meetings between Fingal County Council, ANCA and the daa

1.0 Significant Information Request

1.0 What has changed

This is a new chapter focusing on the significant information request with specific commentary on the new flight paths introduced in the EIAR Supplement and their implications on the planning application and environmental assessment.

1.1 Public Notice

We refer to the public notice as published in the Irish Times on November 10th. It is noted that:

> "*The significant additional information, which includes an Environmental Impact Assessment Report supplement, was received in response to a request for additional information.*"



THE IRISH TIMES
Friday, November 10, 2023

Sport Racing 19

The pace of change has to increase at the IHRB if public scepticism is to ease

Brian O'Connor
Odds and Sods

Regulator's failure to present evidence in Hogan case appears slipshod

CLASSIFIED EXTRA

HOUSES AND LANDS FOR SALE

COMMERCIAL PROPERTY

PUBLIC NOTICES

An Bord Pleanála

Fógra maidir le hEolas Suntasach Breise I ndáil le hachomharc reatha i leith úsáid oíche an chórais ruidhleadaigh ag Aerfort Bhaile Átha Cliath
Comhairle Contae Fhine Gall
Iarratas arna Thaisceadh: 18 Nollaig 2020
Achomharc curtha faoi bhráid an Bhoird: 24 Lúnasa 2022
Uimhir Thagartha an Chláir Phleanála: F20A/0668
Uimhir Thagartha an Achomhairc: ABP-311612-22

Notice of Significant Additional Information in relation to a current appeal in respect of night-time use of the runway system at Dublin Airport
Fingal County Council
Application Lodged: 18th December 2020
Appeal lodged to the Board: 24th August 2022
Planning Register Reference Number: F20A/0668
Appeal Reference Number: ABP-311612-22

ADVERTISE HERE

THE IRISH TIMES

1.2 Request for additional information

We refer to the request for additional information as published on the Dublin Airport website on November 10th. It is noted that:

> "*Dublin Airport Authority has submitted additional information in response to a request for additional information from An Bord Pleanála in relation to the above appeal. The additional information includes an Environmental Impact Assessment Report supplement. The additional information is available for inspection at the offices of Fingal County Council, County Hall, Swords, Co. Dublin, and An Bord Pleanála, 64 Marlborough Street, Dublin 1.*"

Notice of Significant Additional Information in relation to a current appeal in respect of night-time use of the runway system at Dublin Airport

Fingal County Council

Application Lodged: 18th December 2020

Appeal lodged to the Board: 24th August 2022

Planning Register Reference Number: F20A/0668

Appeal Reference Number: ABP-314485-22

Notice is hereby given that the Board has received significant additional information from the applicant, DAA PLC, which the Board considers contains significant additional information on the effects on the environment of the proposed development. The significant additional information, which includes an Environmental Impact Assessment Report Supplement, was received in response to a request for additional information from a notice which issued from An Bord Pleanála on 26th May 2023. This case relates to appeals made to An Bord Pleanála against a decision made on 8th August 2022 by Fingal County Council, bearing the above planning reference number which decision was to grant permission with conditions to DAA PLC for the taking of a 'relevant action' only within the meaning of Section 34C of the Planning and Development Act 2000, as amended, at Dublin Airport, Co. Dublin, in the townlands of Collinstown, Toberbunny, Commons, Cloghran, Corballis, Coultry, Portmellick, Harristown, Shanganhill, Sandyhill, Huntstown, Pickardstown, Dunbro, Millhead, Kingstown, Barberstown, Forrest Great, Forrest Little and Rock on a site of c. 580 ha. The proposed relevant action relates to the night-time use of the runway system at Dublin Airport. It involves the amendment

Nowhere in the notice does it identify that there are to be changes to the flight paths from the original grant of planning in 2007 or that there are proposed changes to the flight paths that were submitted with the original relevant action planning submission to Fingal County Council on which they adjudicated on. Therefore, the public notice fails to notify the public at large of modifications to the planning submission that could have very significant effects on them, their health and their well-being. In actual fact, the public notice states that the significant additional information is in relation to a request for additional information from An Bord Pleanála which did not request a change to flight paths. We refer to section 1.2.1 of the EIAR supplement which clearly states:

> *"The applicant has identified a number of changes that have taken place since September 2021 that could affect the findings of the environmental assessments presented in the September 2021 EIAR.*
>
> *These changes include:*
>
> - *actual flight paths from North Runway upon commencement differing from assumed flightpaths used for modelling/assessment purposes in the 2021 EIAR;*
> - *updated air traffic forecast data;*

- *earlier fleet modernisation;*
- *the north runway becoming operational in August 2022; and*
- *other passage of time changes that include changes to the environmental baseline conditions and changes to relevant aviation, planning and environmental legislation, policy, guidance and best practice."*

1.2 Changes addressed by this EIAR Supplement

1.2.1 The Applicant has identified a number of changes that have taken place since September 2021 that could affect the findings of the environmental assessments presented in the September 2021 EIAR. These changes include:

- actual flightpaths from North Runway upon commencement differing from assumed flightpaths used for modelling/assessment purposes in the 2021 EIAR;
- updated air traffic forecast data;
- earlier fleet modernisation;
- the North Runway becoming operational in August 2022; and
- other 'passage of time changes' that include changes to the environmental baseline conditions and changes to relevant aviation, planning and environmental legislation, policy, guidance and best practice.

None of these items are contained within the new Public Notice or the original Public Notice submitted in December 2020, and which ALL are of MAJOR importance to the public affected by the operation of the Dublin Airport North Runway. The Public Notice reads as if the daa only want to change Condition 3(d) and Condition 5 and replace them with alternatives. It does not ALERT the public to the other major changes from the permission granted in 2007. We the public, as the Board is very aware, were shocked beyond belief when the North Runway opened (and again we confirm it is operational and the planning conditions of ABP decision in 2007 do apply) as the flight paths were completely different from those environmentally assessed during the 2007 planning process. Clearly from Section 1.2 of the EIAR Supplement the daa are aware of the requirement to notify the Board of major issues that affect the previous environmental assessments but also, they are obliged to inform the public and provide consultation on these matters so that the public are made aware of these issues and can make submissions and observations as provided under all current legislation. As set out by the daa we see this as an attempt to regularise retention of unauthorised use of the runway for which they have not informed the public nor carried out the process as required by current legislation requirements. In order to demonstrate this, we point to pages 168 and 169 of the Planner's Report from Fingal County Council (Copy attached). Under the heading of Flight Paths:

> *"The proposal under consideration in the Relevant Action as subject to the Regulatory Decision has no impact on nor consents any changes to flightpaths. It is outlined in the EIAR there will be no new flight paths in the proposed scenario."*

Flight paths

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Concerns have been expressed in relation to the introduction of flight paths. Concerns are raised regarding divergence in flight paths when runways are operating in mixed mode. It is stated that the route has not been included in the contour modelling. It is also stated noise contours cannot be relied upon given metrics used.

The proposal under consideration in the Relevant Action as subject to the Regulatory Decision has no impact on nor consents any changes to flightpaths. It is outlined in the EIAR there will be no new flight paths in the proposed scenario.

Flight paths have been included in the modelling. ANCA has undertaken their own modelling and metrics in analysing and these have been taken into account in the Regulatory Decision consent. ANCA in SEA report outline the assessment of impacts of flight paths and departure procedures of *Dublin Airport's operation is a matter for daa and the competent authorities for airspace management and design.*

So, Fingal Planning Department were misled and understood that there were no new flight paths within the planning application, and as per our correspondence on "Flight Paths" it is crystal clear that the flight paths have been altered significantly in the Relevant Action application. Given this fact and it is clear at section 1.2 of the EIAR supplement that there are indeed changes to flight paths and that unauthorised flight paths are being currently operated a new planning submission for retention must be provided by the daa and this application cannot be considered any further.

Furthermore, the Public Notice as relates to the significant additional information states:

> *"Conditions 3(d) and 5 have not yet come into effect or operation, as the construction of the North Runway on foot of the North Runway Planning Permission is ongoing".*

This is completely wrong and unfortunately has misled the public. The North Runway opened in August 2022 and has been in operation for more than one year now. Conditions 3(d) and 5 are very much in effect NOW. This error has major implications. Firstly, as noted it has misled the public. Secondly the runway since opening has been operated by the daa in contravention of Condition 5 and as a result Fingal County Council have issued enforcement proceedings against the daa. Therefore, this Significant Additional Information is for RETENTION of an unauthorised development. However, in accordance with the amended Section 34(12) of the Planning and Development Act because neither an AA nor EIAR were submitted for the use of the runway in breach of the planning granted, the planning Bord must refuse to deal with this application. We therefore respectfully request An Bord Pleanála to rectify the above wrong doings and inform the Public that the Public Notice is wrong so that they can contribute their concerns to this application.

1.2 Aircraft Noise (Dublin Airport) Regulation Act 2019

We draw the Board's attention to section 12 of the Aircraft Noise (Dublin Airport) Regulation Act 2019 and

> *"Supplementary provisions relating to decisions on applications referred to in sections 34B(1) or 34C(1) which were not refused by virtue of section 34B(5) or 34C(5)."*
>
> At 37R.(1)(a) of the Act it states:
>
> *"This section applies in addition to section 37 in the case of an appeal under section 37 against a decision of the planning authority under section 34 where, pursuant to section 34B(15) or 34C(16) that decision incorporates a regulatory decision of the competent authority under section 34B(13)(a) or 34C(14)(a) as the case may be".*

Therefore, this applies to this case.

At 37R.(2) it states:

> *"For the purposes of a relevant appeal the reference in section 37(1) to 'any person who made submissions or observations in writing in relation to the planning application to the planning authority' includes any person who made submissions or observations in writing referred to in section 34B(11)(c) or 34C(12)(c) to the competent authority in relation to the draft regulatory decision or related report referred to in 34B(9) or (10), as the case may be, or section 34C(10) or (11) as the case may be."*

There were 1382 submissions (https://consult.fingal.ie/en/consultation/aircraft-noise-consultation) made by the public to the competent authority on their draft regulatory decision. HOWEVER, having checked with a number of these people NONE of them have been written to by the Competent Authority or the Board to inform them that they are entitled to make an appeal of the decision by Fingal County Council to grant permission. **This group of people may have been denied their statutory right to appeal.**

Amendment of Act of 2000 - insertion of sections 37R and 37S

12. The Act of 2000 is amended by the insertion of the following sections after section 37Q:

"Supplementary provisions relating to decisions on applications referred to in section 34B(1) or 34C(1) which were not refused by virtue of section 34B(5) or 34C(5)

37R. (1) (a) This section applies in addition to section 37 in the case of an appeal under section 37 against a decision of the planning authority under section 34 where, pursuant to section 34B(15) or 34C(16), that decision incorporates a regulatory decision of the competent authority under section 34B(13)(a) or 34C(14)(a), as the case may be.

(b) The competent authority shall be a party to the appeal notwithstanding section 34B(15)(b) or 34C(16)(b).

(2) For the purposes of a relevant appeal, the reference in section 37(1) to 'any person who made submissions or observations in writing in relation to the planning application to the planning authority' includes any person who made submissions or observations in writing referred to in section 34B(11)(c) or 34C(12)(c) to the competent authority in relation to the draft regulatory decision or related report referred to in section 34B(9) or (10), as the case may be, or section 34C(10) or (11), as the case may be.

1.3 Flight Paths

The North Runway at Dublin Airport received a Grant of Planning permission in August 2007 by An Bord Pleanála Ref PL 06F.217429 Planning Reg Ref F04A/1755.

To comply with conditions 6, 7 and 9 a report "*Dublin Airport – North Runway Option 7B Forecast Contours Conditions 6,7 & 9*" by Bickerdike Allen Partners (BAP) on behalf of the daa was submitted to Fingal County Council in December 2016.



DUBLIN AIRPORT – NORTH RUNWAY

OPTION 7B FORECAST CONTOURS

CONDITIONS 6, 7 & 9

Report to

Martin Doherty
Environmental Lead
North Runway Project
Dublin Airport Authority

A9843-R03-Rev3-NW
26 October 2016

Fingal County Council issued correspondence to the daa in December 2016 informing them that the compliance submission was deemed by Fingal County Council to comply with conditions 6, 7 & 9.

At page 4 of the Report, BAP confirm that they have produced noise contours on the forecast (2022 High Growth Forecast for a typical busy day produced in August 2015) for the daytime

period with the same runway usage assumptions as Option 7b as submitted to ABP during the planning process.

At page 7 under section 2.4 "*Route Utilisation*" it is noted that:

> *"As the proposed routes are still being developed with the IAA, those from the Dublin Airport optimization exercise undertaken in 2011 have been re-used."*

As per the documentation submitted for planning approval it is noted that:

> *"For the parallel runways, initial departure routes have been prepared based on the existing published routes for the south runway, with those for the north runway in effect replicating them."*

For departures it states clearly:

> *"For category C & D aircraft, the aircraft are modelled as flying straight for 5 nm before turning."*

2.4 Route Utilisation

As the proposed routes are still being developed with the IAA, those from the Dublin Airport optimization exercise undertaken in 2011 have been re-used. Flight routes for the existing runway were used and assumptions for future routes from the north runway were made based on available information.

Straight arrival routes have been assumed for all runways. For the crosswind runway, straight departure routes have also been assumed.

For the parallel runways, initial departure routes have been prepared based on the existing published routes for the south runway, with those for the north runway in effect replicating them. There are four initial departure routes for each runway end, heading approximately north, south, east and west.

For category A & B aircraft, the initial turns are modelled as occurring shortly after the end of the runway. For category C & D aircraft, the aircraft are modelled as flying straight for 5 nm before turning. These C & D routes have been supplemented for departures to the west by routes that turn earlier. This assumption arises from a previous study of radar data which found that approximately 75% of the category C & D aircraft on runway 28 actually perform

No other compliance documents to Conditions 6, 7 and 9 which revise the above was submitted to Fingal County Council. Therefore, this compliance submission still stands.

Again, in accordance with the documentation submitted for planning approval and which were the only routes assessed within the Environmental Impact Statement submitted to Fingal County Council and An Bord Pleanála. The reference to "*still being developed with the IAA"* is taken to mean that these routes which were Environmentally Assessed during the planning process and presented to the public indicating the Environmental issues concerned as relating to these routes were being ratified with the IAA to meet the planning granted as submitted.

At page 23 of 102 of the ABP Inspectors Report for the 2007 Grant of Planning submission (https://archive.pleanala.ie/api/documents/Report/217/R217429.pdf) it is clearly stated that:

> *"The Irish Aviation Authority in a letter dated 24/01/04 ((sic) – possibly dated incorrectly) states that the Authority has been consulted by the applicants on the development during the design stages and the proposal conforms with its requirements."*

4.3 Reports from Notified Bodies

Following notification by the planning authority the following submissions were received.

The **Irish Aviation Authority** in a letter dated **24/01/04** ((sic) – possibly dated incorrectly) states that the Authority has been consulted by the applicants on the development during the design stages and the proposal conforms with its requirements.

The **Health and Safety Authority** in a letter dated **30/12/04** does not advise against a grant of permission in the context of Major Accident Hazards.

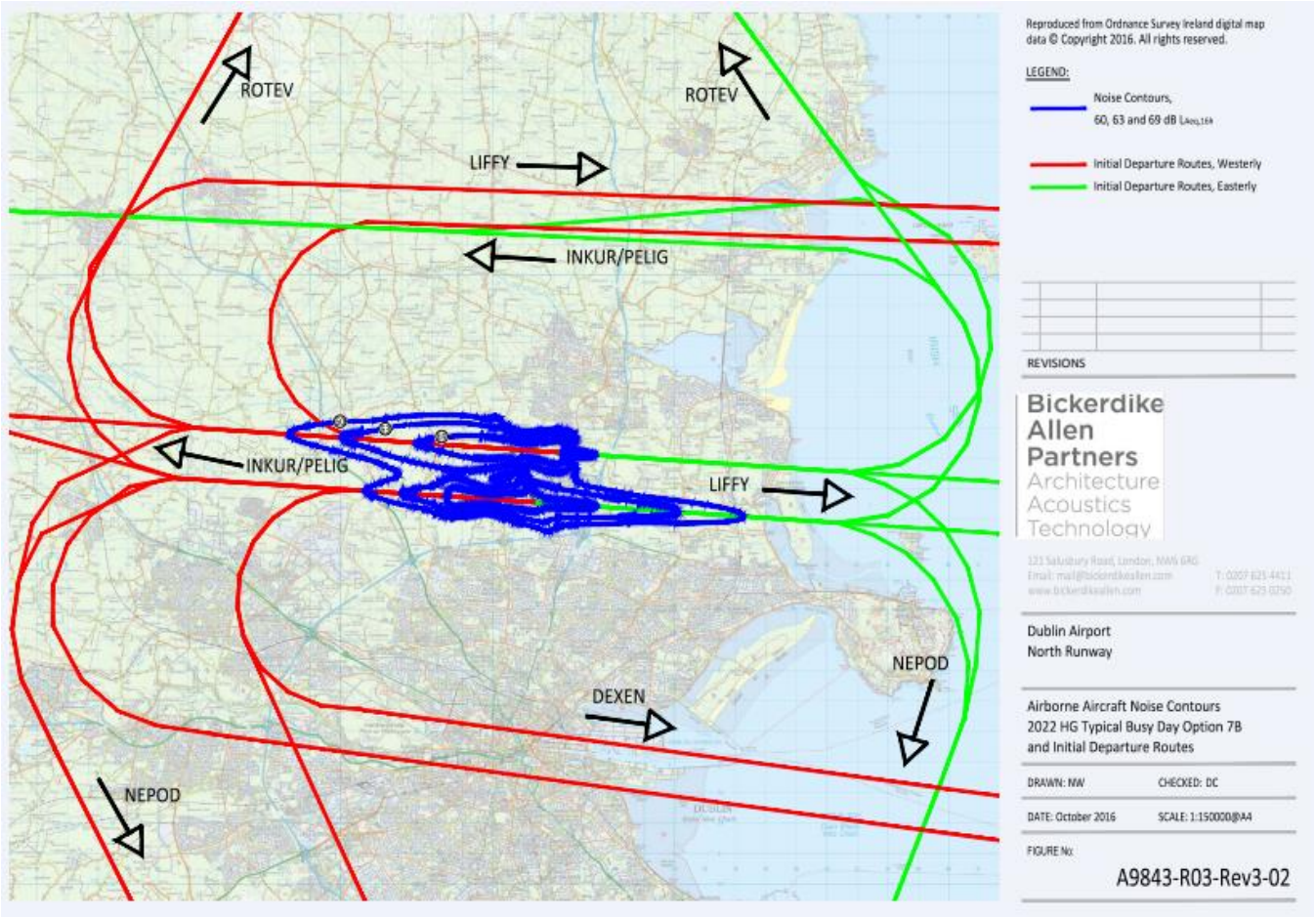
The **Department of the Environment, Heritage and Local Government** in a letter dated **07/01/05** relating to archaeology and cultural heritage recommends pre-development testing, monitoring and reporting by way of condition should permission be granted.

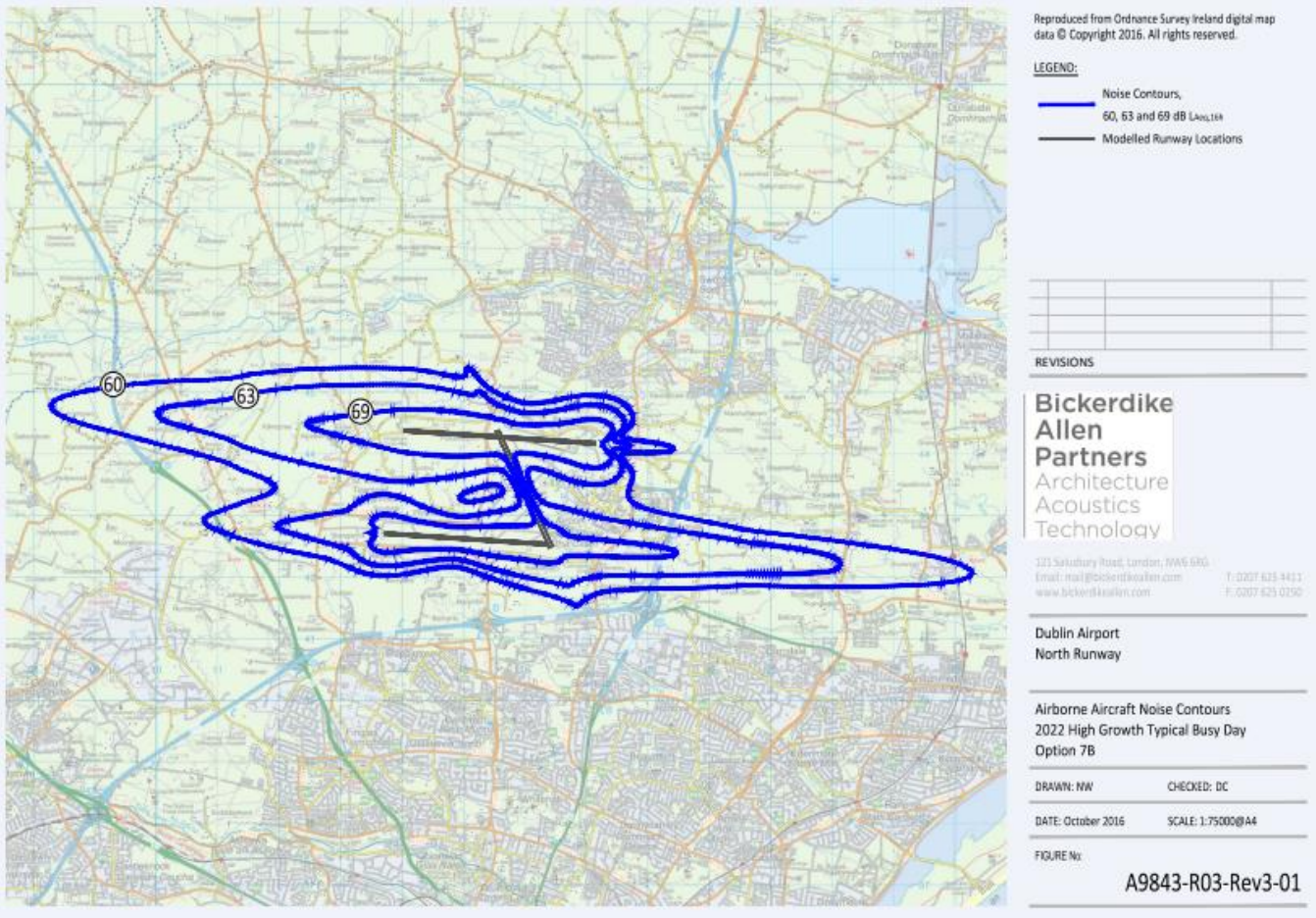
The **Eastern Regional Fisheries Board** in a letter dated **21/01/05** notes that the existing airport development has impacted negatively on the local watercourses and that the current practice is unsustainable and should not continue. Surface water from all impervious areas should be treated before final discharge to watercourses preferably to sewer. As the Ward River is an extremely important salmonid system the Board is opposed to the drainage of any surface water from impervious areas to

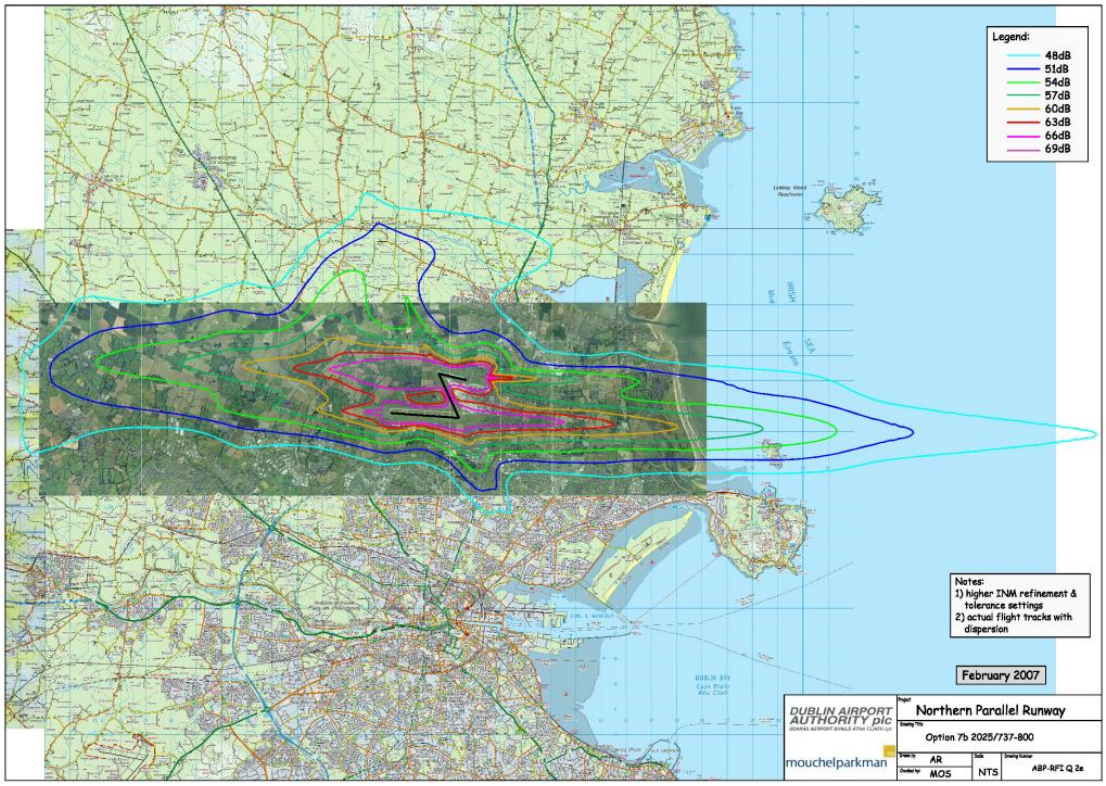
PL06F.217429 **An Bord Pleanála** **Page 23 of 102**
Vol.1

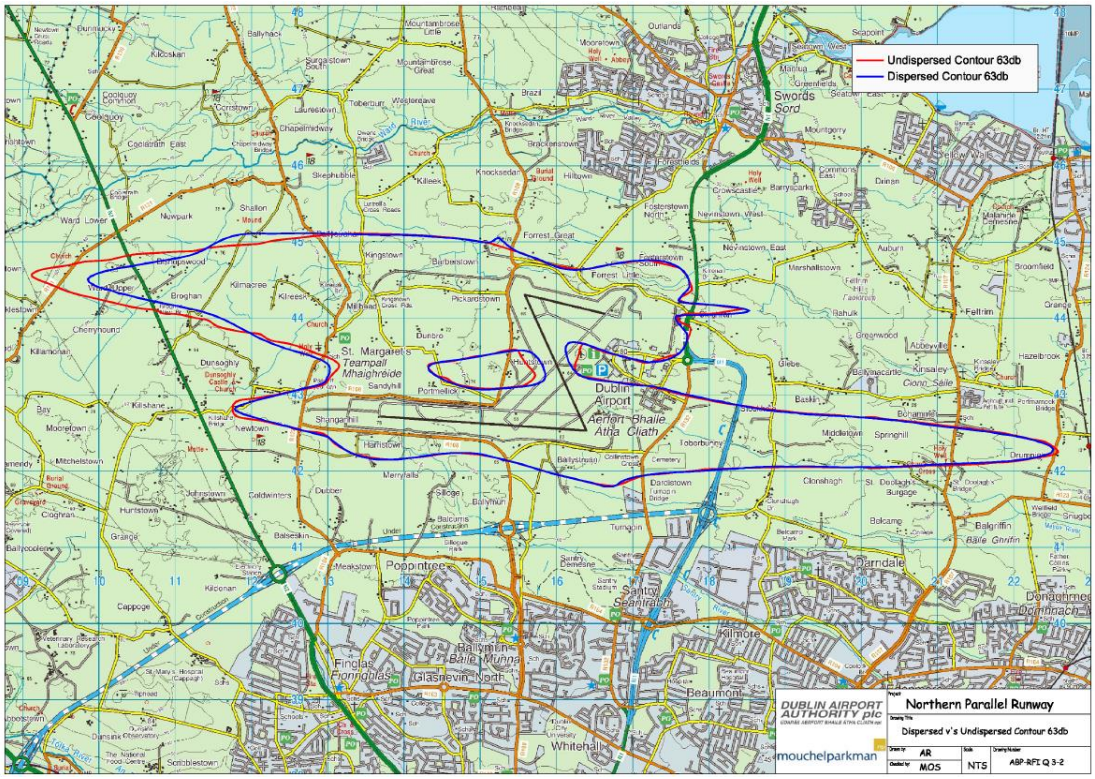
These routes indicated on Fig A9843-R03-Rev3-02 result in the noise contours as per Fig A9843-R03-Rev3-01, as presented in the BAP report and are similar to the contours presented as additional information to ABP in March 2007 in Figs ABP-RFI Q 2e and ABP-RFI Q 3-2

Fig 1


ROTEV
ROTEV
LIFFY
INKUR/PELIG
INKUR/PELIG
LIFFY
NEPOD
DEXEN
NEPOD
Reproduced from Ordnance Survey Ireland digital map data © Copyright 2016. All rights reserved.
LEGEND:
Noise Contours, 60, 63 and 69 dB LAeq,16h
Initial Departure Routes, Westerly
Initial Departure Routes, Easterly
REVISIONS
Bickerdike Allen Partners
Architecture Acoustics Technology
Dublin Airport
North Runway
Airborne Aircraft Noise Contours
2022 HG Typical Busy Day Option 7B
and Initial Departure Routes
DRAWN: NW
CHECKED: DC
DATE: October 2016
SCALE: 1:150000@A4
FIGURE No:
A9843-R03-Rev3-02


60
63
69
Reproduced from Ordnance Survey Ireland digital map data © Copyright 2016. All rights reserved.
LEGEND:
Noise Contours, 60, 63 and 69 dB LAeq,16h
Modelled Runway Locations
REVISIONS
Bickerdike Allen Partners
Architecture Acoustics Technology
Dublin Airport
North Runway
Airborne Aircraft Noise Contours
2022 High Growth Typical Busy Day
Option 7B
DRAWN: NW
CHECKED: DC
DATE: October 2016
SCALE: 1:75000@A4
FIGURE No:
A9843-R03-Rev3-01


Legend:
48dB
51dB
54dB
57dB
60dB
63dB
66dB
69dB
Notes:
1) higher INM refinement & tolerance settings
2) actual flight tracks with dispersion
February 2007
DUBLIN AIRPORT AUTHORITY plc
Northern Parallel Runway
Option 7b 2025/737-800
mouchelparkman
AR
MOS
NTS
ABP-RFI Q 2a


Undispersed Contour 63db
Dispersed Contour 63db
Swords
Sord
Dublin Airport
Aerfort Bhaile Átha Cliath
DUBLIN AIRPORT AUTHORITY plc
Northern Parallel Runway
Dispersed v's Undispersed Contour 63db
mouchelparkman
AR
MOS
NTS
ABP-RFI Q 3-2

It is crystal clear from the above that the flight paths that produce the assessed noise contours are straight out and are NOT DIVERGENT flight paths as indicated on all of the Relevant Action noise contours provided which clearly indicate divergent Noise contours to the North at the end of the runway.

In the EIS submitted in 2004 it states at section 16.1.3.4:

> *"The flight tracks associated with the existing 10/28 runway, the existing 16/34 runway and the existing 11/29 runway are in accordance with AIP Ireland as published by the Irish Aviation Authority. For the proposed runway, it was assumed that the aircraft would join up with the tracks used for the existing 10/28 runway which was agreed with the Irish Aviation Authority to be a reasonable assumption at this stage. Appendix G3 shows the track data used."*

16.1.3.3 The following input data influence the shape and size of the contour:

(a) Tracks

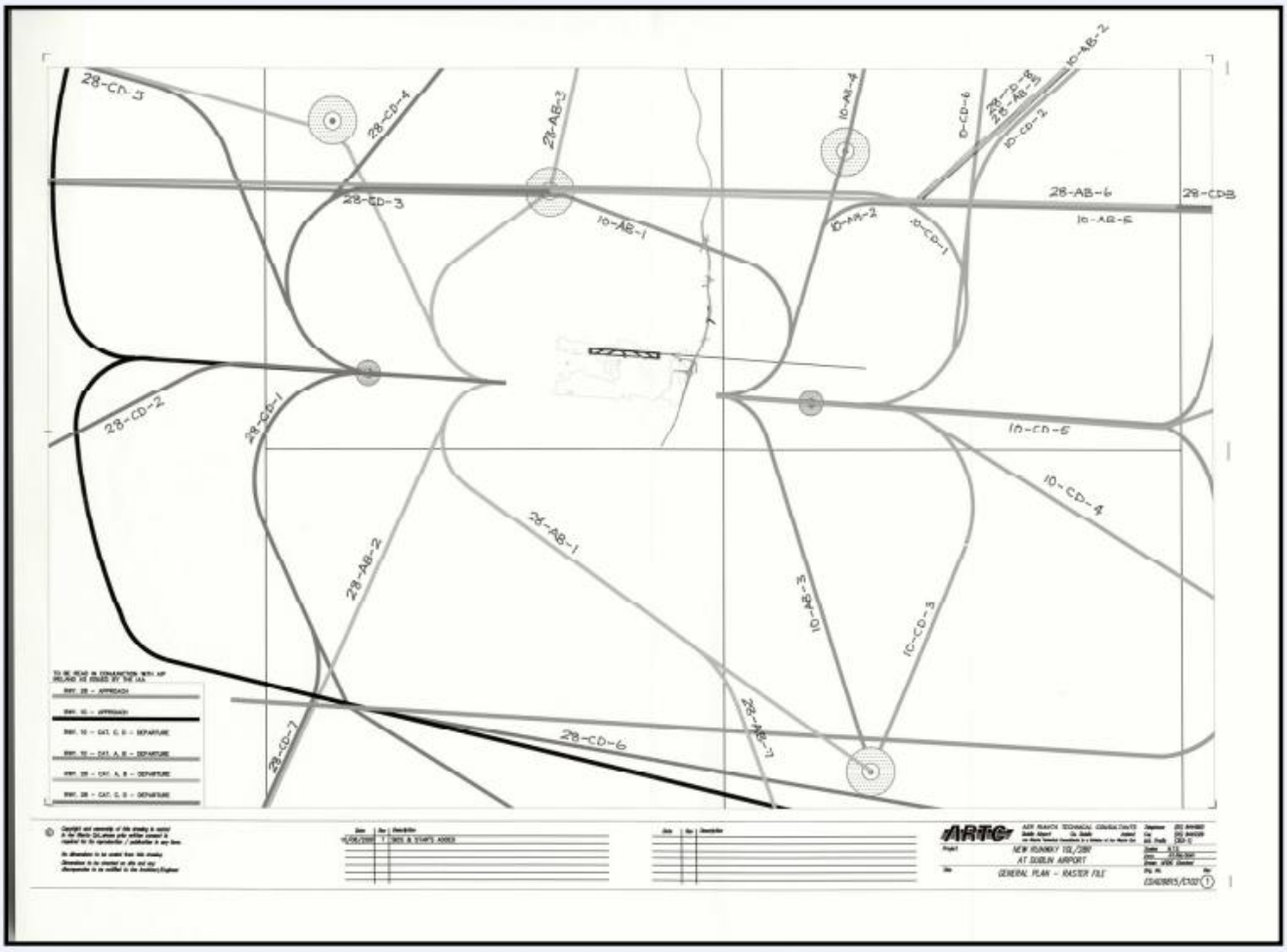
16.1.3.4 The flight tracks associated with the existing 10/28 runway, the existing 16/34 runway and the existing 11/29 runway are in accordance with AIP Ireland as published by the Irish Aviation Authority. For the proposed runway, it was assumed that the aircraft would join up with the tracks used for the existing 10/28 runway which was agreed with the Irish Aviation Authority to be a reasonable assumption at this stage. Appendix G3 shows the track data used.

16.1.3.5 It should be noted that the absolutely precise route that an aircraft will adopt is very dependent on factors such as aircraft performance, weather, instrumentation accuracy and pilot skill. Therefore the tracks shown in Appendix G3 cannot be considered to be definitive. However the logarithmic nature by which sound is described, and the averaging process of the assessment procedure, means that the resultant inaccuracies are relatively small.

16.1.3.6 Note that Dublin split aircraft into four categories, A to D. There are different tracks for A + B aircraft and C + D aircraft. The category of each aircraft type is given in Appendix G2, with the tracks appropriately labelled in Appendix G3.

The routes as per Appendix G3 are straight out:

APPENDIX G3
Flight Tracks



In Appendix G9 of the original EIS from 2004, it is stated that:

"For the new 10/28 runway it is assumed that aircraft using this will follow similar flight tracks to those for the existing runway. Therefore the tracks of the new runway have been sensibly joined up to the existing tracks."

APPENDIX G9
Summary of Assumptions

Assumptions made for Dublin Airport assessment:

- Where INM does not hold records for an aircraft type, an equivalent aircraft with similar engines and range has been substituted.
- The aircraft types have been allocated a category A, B, C or D in accordance with procedure at Dublin.
- Departure flights were allocated to tracks on the basis of the SIDs (Standard Instrument Departures) and destinations as determined in discussion with the Irish Aviation Authority.
- Runway 11/29 has been assumed to have straight approach and straight departure tracks.
- Runway 16/34 and existing Runway 10/28 have approach and departure tracks in accordance with AIP Ireland as published by the Irish Aviation Authority.
- For the new 10/28 runway it is assumed that aircraft using this will follow similar flight tracks to those for the existing runway. Therefore the tracks of the new runway have been sensibly joined up to the existing tracks.

These agreed flight paths/tracks with the daa and the Irish Aviation Authority are those that were assessed in the EIS submitted with the planning application for the North Runway and which was granted permission by ABP in 2007. Condition 1 of that Grant of planning states that:

"The development shall be carried out in accordance with the plans and particulars and the Environmental Impact Statement lodged with the application…"

CONDITIONS

1. The development shall be carried out in accordance with the plans and particulars and the Environmental Impact Statement lodged with the application as amended by the further plans and particulars received by the planning authority on the 9th day of August, 2005, including the Environmental Impact Statement Addendum, and the 3rd day of March, 2006 and received by An Bord Pleanála on the 30th day of August, 2006, the 5th day of March, 2007 and in the oral hearing, except as may otherwise be required in order to comply with the following conditions.

   Reason: In the interest of clarity.

The daa are in contravention of this condition and are carrying out unauthorised development as they are in breach of this condition of planning. No revised planning application to change the flight paths has been granted permission.

We also bring your attention to the Site Notice and Newspaper Notice advertising this planning application. This notice specifically states:

> *"The proposed relevant action relates to the night-time use of the runway system at Dublin Airport. It involves the amendment of the operating restrictions set out in condition no. 3(d) and the replacement of the operating restriction in condition no. 5 of the North Runway Planning Permission"*

> *"The proposed Relevant Action does not seek any amendment of conditions of the North Runway Planning Permission governing the general operation of the runway system"*

FINGAL COUNTY COUNCIL

18-12-2020F 20A/0668
FINGAL COCO PL DEPT

SITE NOTICE

daa plc intends to apply for permission for a proposed development comprising the taking of a 'relevant action' only within the meaning of Section 34C of the Planning and Development Act 2000, as amended, at Dublin Airport, Co. Dublin, in the townlands of Collinstown, Toberbunny, Commons, Cloghran, Corballis, Coultry, Portmellick, Harristown, Shanganhill, Sandyhill, Huntstown, Pickardstown, Dunbro, Millhead, Kingstown, Barberstown, Forrest Great, Forrest Little and Rock on a site of c. 580 ha.

The proposed relevant action relates to the night-time use of the runway system at Dublin Airport. It involves the amendment of the operating restriction set out in condition no. 3(d) and the replacement of the operating restriction in condition no. 5 of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19), as well as proposing new noise mitigation measures. Conditions no. 3(d) and 5 have not yet come into effect or operation, as the construction of the North Runway on foot of the North Runway Planning Permission is ongoing.

The proposed relevant action, if permitted, would be to remove the numerical cap on the number of flights permitted between the hours of 11pm and 7am daily that is due to come into effect in accordance with the North Runway Planning Permission and to replace it with an annual night-time noise quota between the hours of 11.30pm and 6am and also to allow flights to take off from and/or land on the North Runway (Runway 10L 28R) for an additional 2 hours i.e. 2300 hrs to 2400hrs and 0600 hrs to 0700 hrs. Overall, this would allow for an increase in the number of flights taking off and/or landing at Dublin Airport between 2300 hrs and 0700 hrs over and above the number stipulated in condition no. 5 of the North Runway Planning Permission, in accordance with the annual night time noise quota.

The relevant action pursuant to Section 34C (1) (a) is:

To amend condition no. 3(d) of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19). Condition 3(d) and the exceptions at the end of Condition 3 state the following:

'3(d). Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours.

except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports.'

Permission is being sought to amend the above condition so that it reads:

'Runway 10L-28R shall not be used for take-off or landing between 0000 hours and 0559 hours

except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports or where Runway 10L-28R length is required for a specific aircraft type."

The net effect of the proposed change, if permitted, would change the normal operating hours of the North Runway from the 0700hrs to 2300 hrs to 0600 hrs to 0000 hrs.

The relevant action also is:

To replace condition no. 5 of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19) which provides as follows:

5. *On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007.*

Reason: *To control the frequency of night flights at the airport so as to protect residential amenity having regard to the information submitted concerning future night time use of the existing parallel runway."*

With the following:

A noise quota system is proposed for night time noise at the airport. The airport shall be subject to an annual noise quota of 7990 between the hours of 2330hrs and 0600hrs.

In addition to the proposed night time noise quota, the relevant action also proposes the following noise mitigation measures:

- A noise insulation grant scheme for eligible dwellings within specific night noise contours
- A detailed Noise Monitoring Framework to monitor the noise performance with results to be reported annually to the Aircraft Noise Competent Authority (ANCA), in compliance with the Aircraft Noise (Dublin Airport) Regulation Act 2019.

The proposed relevant action does not seek any amendment of conditions of the North Runway Planning Permission governing the general operation of the runway system (i.e., conditions which are not specific to nighttime use, namely conditions no. 3 (a), 3(b), 3(c) and 4 of the North Runway Planning Permission) or any amendment of permitted annual passenger capacity of the Terminals at Dublin Airport. Condition no. 3 of the Terminal 2 Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No. PL06F.220670) and condition no. 2 of the Terminal 1 Extension Planning Permission (Fingal County Council Reg. Ref. No. F06A/1843; ABP Ref. No. PL06F.223469) provide that the combined capacity of Terminal 1 and Terminal 2 together shall not exceed 32 million passengers per annum.

The planning application will be subject to an assessment by the Aircraft Noise Competent Authority in accordance with the Aircraft Noise (Dublin Airport) Regulations Act 2019 and Regulation (EU) No 598/2014. The planning application is accompanied by information provided for the purposes of such assessment.

An Environmental Impact Assessment Report will be submitted with the planning application. The planning application and Environmental Impact Assessment Report may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority during its public opening hours of 9.30 - 16.30 (Monday – Friday) at Fingal County Council, Fingal County Hall, Main Street, Swords, Fingal, Co. Dublin. A submission or observation in relation to the Application may be made in writing to the Planning Authority on payment of a fee of €20, within the period of 5 weeks, beginning on the date of receipt by Fingal County Council of the Application, and such submissions or observations will be considered by the Planning Authority in making a decision on the application. The Planning Authority may grant permission subject to or without conditions, or may refuse to grant permission.

Signed: _____
Agent: Gavin Lawlor - Tom Phillips + Associates, 80 Harcourt Street, Dublin 2. D02 F449 Date of erection of site notice: 16th December 2020

Nowhere does it state that there are proposed changes to the flight paths that were submitted both in the planning process and for planning compliance in 2007 and 2016 and yet divergent flight paths are indicated within the documentation. In fact, on pages 168/169 of the Planner's Report from Fingal it clearly states that there are no proposed changes to the flight paths within the relevant action submission. The Site Notice and Newspaper Notice has misled the public by not notifying them that major changes are proposed to the planning information submitted for the 2007 grant of planning within the Relevant Action application.

Flight paths

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Concerns have been expressed in relation to the introduction of flight paths. Concerns are raised regarding divergence in flight paths when runways are operating in mixed mode. It is stated that the route has not been included in the contour modelling. It is also stated noise contours cannot be relied upon given metrics used.

The proposal under consideration in the Relevant Action as subject to the Regulatory Decision has no impact on nor consents any changes to flightpaths. It is outlined in the EIAR there will be no new flight paths in the proposed scenario.

Flight paths have been included in the modelling. ANCA has undertaken their own modelling and metrics in analysing and these have been taken into account in the Regulatory Decision consent. ANCA in SEA report outline the assessment of impacts of flight paths and departure procedures of *Dublin Airport's operation is a matter for daa and the competent authorities for airspace management and design.*

Furthermore, since the North Runway commenced operations in August 2022 it has breached condition 5 and exceeded 65 aircraft movements per night which Fingal County Council have

issued enforcement proceedings against the daa. The use of the North Runway is therefore unauthorised development and a planning application for retention of use of this unauthorised development has not been submitted for planning approval. Also, the 32m passenger cap was exceeded in 2019 and on course again to exceed in December this year. Therefore, this breach of planning occurred prior to the planning submission of the Relevant Action in December 2020 and no EIAR or AA were carried out at the time of the breach. Therefore, in accordance with the amended Planning and Development Act Section 34(12) (https://www.irishstatutebook.ie/eli/2022/act/29/enacted/en/print#sec12) which is the current planning legislation, the planning authority shall refuse to consider the application to retain unauthorised development as neither an EIA or AA were carried out for the current use of the airport.

Amendment of section 34 of Principal Act

12. Section 34 of the Principal Act is amended—

(a) by the insertion of the following subsection after subsection (4):

"(4A) Notwithstanding subsection (1), where a planning authority grants permission for a development on foot of an application accompanied by an opinion provided by the planning authority under section 32I(2) the permission shall include a condition in respect of any detail of the development that was not confirmed at the time of the application requiring—

(a) the actual detail of the development to fall within specified options, parameters or a combination of options and parameters, and

(b) the applicant to notify the planning authority in writing, by such date prior to the commencement of the development, or prior to the commencement of the part of the development to which the detail relates, as the Minister may prescribe, of the actual detail of the development.",

(b) by the substitution of the following subsection for subsection (12):

"(12) A planning authority shall refuse to consider an application to retain unauthorised development of land where it decides that either or both of the following was required or is required in respect of the development:

(a) an environmental impact assessment;

(b) an appropriate assessment.",

and

(c) in subsection (12A), by the substitution of "an application in respect of the following development shall be deemed not to have required, and not to require, a determination as to whether an environmental impact assessment is required" for "if an application for permission had been made in respect of the following development before it was commenced, the application shall be deemed not to have required a determination referred to at subsection (12)(b)".

One important critical piece of information that is missing from the revised EIAR Supplement is the latest contours and data from the 92-day modelling period in 2023. This is critical information that is required to understand how the new Runway system operated during the busy summer season. The 92-day modelling period ended on September 15th and therefore the daa had ample time to provide this data. This is real measured data, and the Board must insist on access to it. The Board should not be adjudicating on modelled data when real data is available. It's imperative that the Board request this data.

1.4 Flight Path Options

We note the response to the Minister from AirNav Ireland dated May 8th, 2023, regarding the drawing up of the current Standard Instrument Departures (SIDs) for the North Runway at Dublin Airport ('*20230508 AirNav Ireland response to Department of Transport.pdf*').

Having carried out a full review of the EIS documentation submitted to both Fingal County Council and An Bord Pleanála for the 2007 grant of planning permission it is crystal clear that the only flight paths considered with respect to Environmental Assessment and the impacts and mitigation measures presented were based on the population that were affected by the proposed straight out flight paths and that nowhere in the submitted documentation was divergent flight paths presented, assessed or significance criteria and mitigation measures proposed.

At page 23 of 102 of ABP Inspectors Report for the 2007 Grant of Planning submission (https://archive.pleanala.ie/api/documents/Report/217/R217429.pdf), the Irish Aviation Authority (IAA) in a letter dated 24/01/04 ((sic- possibly dated incorrectly) states that the Authority has been consulted by the applicants on the development during the design stages and the proposal conforms with its requirements. Please refer to section 1.3 for a summary of documents submitted for the flight paths for the 2007 grant of planning submission.

Given therefore that the aaa and the IAA were fully aware of the flight paths submitted and conditioned at Condition 1 of the ABP planning decision in 2007 how could these planning conditions be ignored when drawing up the SIDs for the North runway? Given that the IAA specifically excluded itself from responsibility for planning compliance, who was responsible for oversight implementation and Compliance?

As with any EIAR it is a specific requirement to review various alternative proposals. Note in AirNav's response they say that they briefly examined an alternative missed approach for Runway 28L and state that:

> *"Any decision on amended missed approach procedures from runway 28L would require multi-stakeholder discussion and agreement (daa,,IA, Irish Air Corps, Weston, GASU etc). Additionally, changes to the missed approach procedures would lead to aircraft conducting missed approaches flying over high density residential area."*

Firstly, we note that the average number of flyovers per day is 2. The level of noise poised by 2 flights over high density residential areas in the daytime is negligible and is not a valid reason to discount this option. No discussions have taken place with the various stakeholders on reasonable alternatives. This has not been done nor has it been presented within the EIAR. The conditions of the only existing planning permission have been ignored despite having been agreed between the daa and IAA for the planning permission granted in 2007. Even the contents of the AirNav correspondence have not been presented or evaluated within the EIAR which unfortunately invalidates the EIAR as it is now not complete. The daa present this EIAR supplement with changed flight paths as if it is a fait accompli which has not been fully assessed.

What Guidance was given to the sub-contractor companies which tendered to draw up the new SIDs and STARS re planning and environmental compliance and compliance with existing procedures and Letters of Agreement (Loa) with the other airspace stakeholders?

A logical course to have pursued would have been to design the procedures in a way which both complied with planning restrictions and maximized flexibility and use of the new runway layout (green field site option). This approach would require consultation with and agreement from other airspace users, notably Weston airport and the Irish Air Corps in the final phases with adjustments to both proposed and existing procedures to maximise multi operator use of the available airspace assets. Both Weston and IAC formal letters of agreement are currently with the IAA, therefore negotiations on proposed changes to the airspace requiring changes to procedures in airspace adjacent to the Dublin control area would have to be initiated by one of the signatories to the existing Loa's or the daa would have to become a party to the process.

Both the daa and IAA had 16 years since planning was granted to engage with all stakeholders to pursue the alternatives that are required by the Environmental Impact Assessment legislation in Ireland and Europe. It beggars belief that the biggest civil aviation project in the history of Ireland has been implemented without anyone overseeing and project managing the final phase procedures to meet the planning condition requirements.

Unfortunately, the only solution now available in law is that both the IAA and the daa revisit the SIDs incorporating the planning conditions and Noise Abatement Procedures.

Why did the daa not engage with Aviation Consultants to review the alternatives that meet with the conditions of planning and to investigate the alternatives available other than the singular preferred option by them that is now having Profound adverse effects on local residents?

2.0 POPULATION AND HUMAN HEALTH

2.0 What has changed

This is a new chapter focusing on the 'Population and Human Health' chapter in the EIAR Supplement. This chapter has been prepared by Consultant Dr. Niamh Maher and it references the latest scientific literature and also summarises a report, especially commissioned for this planning application, by Dr John Garvey, Medical Director at the Sleep Laboratory, St Vincents Hospital.

2.1 Additional Health Information

In reference to chapter 7, the EIAR report relating to population and human health, **this is an essential part of any EIAR**. The effects of the proposed development on health need to be clearly highlighted and the significance factored into the approval of such a development.

The 2014 EIA Directive updated what should be addressed in an EIAR and the title of human beings was replaced with Population and Human Health.

Initially there is a reference made to the healthy Ireland framework (1), this framework is a '*vision'* where all inhabitants can enjoy '*physical and mental health'* and wellbeing being *'valued and supported'*.

The Healthy Ireland Framework (2019-2025) sets out a vision to create:

> *"A Healthy Ireland, where everyone can enjoy physical and mental health and wellbeing to their full potential, where wellbeing is valued and supported at every level of society and is everyone's responsibility".*

Reference is also made to the WHO environmental noise guidelines published in 2018 (2), which mentions the ideal average noise levels of 45dB day and 40dB night to protect health.

There is a statement regarding determinants of health that take into account a person's genetics and lifestyle, which in combination with environmental noise can have either a protective or more detrimental effect relating to adverse health effects.

The potential impacts of the proposed Relevant Action are mentioned as having effects on air quality and noise pollution, which in turn can be associated with adverse cardiovascular, sleep and mental health effects.

There is a statement that:

> *"Good design and the separation of land uses can lessen noise impacts."*

Ironically this is contradicted by the admitted change in flights paths which do not bear resemblance to, or act in accordance with, the Fingal development plan for the region.

> *"Sleep disturbance**, potentially induced** by aircraft noise, can, in the short-term, impair mood and cognitive performance."*

> *"The long-term effects of sleep disturbance can influence glucose metabolism, appetite regulation, memory immune response and endothelial dysfunction, which can act as precursors for high blood pressure, cardiovascular disease, diabetes and obesity."*

This additional information also comments that it is a challenge to measure sleep and that there is **little evidence to show the link between aircraft noise and lack of sleep.**

> *"Many studies have found that it is biologically plausible that environmental noise exposure **might influence** CVD."*

From the literature described in detail below this is definitely the case.

There is no dispute in this additional information, that aircraft noise is seen to be an environmental stressor and can be associated with adverse effects on mental health. Notably, anxiety and depressive disorders.

In the following sections the above statements are discussed with respect to the relevant scientific literature.

2.3 Sleep Deprivation and Aircraft Noise

As per the additional information in the EIAR Supplement:

> *"Sleep disturbance, potentially induced by aircraft noise, can, in the short-term, impair mood and cognitive performance. The long-term effects of sleep disturbance can influence glucose metabolism, appetite regulation, memory immune response and endothelial dysfunction, which can act as precursors for high blood pressure, cardiovascular disease, diabetes and obesity.*
>
> *Measuring sleep is challenging as there is no one physical, physiological or psychological measure that is considered reliable.* ***As such, there is little evidence evaluating the relationship between aircraft noise and sleep disturbance"***

This is a misleading statement and implies that aircraft noise does not cause sleep disturbance.

Basner, an international expert on the effect of aircraft noise on sleep, has stated that changes in heart rate and body movement can be attributed to aircraft noise while sleeping and the probability of awakening determined using a dose response relationship between the LAS max of the aircraft and the physical determinants of awakenings as mentioned above (3).

This is widely used method to determine the physiological effects of environmental noise on an individual while sleeping.

Previously in 2006 (4) Basner also described the '*dose response relationship*' between the max Sound Pressure Level (SPL) of aircraft and probability of awakening.

The probability of additional awakenings is a method used in European airports to describe the effects of aircraft noise on sleep and is a benchmark for assessing the resultant noise and its effects as in Heathrow (5)

Self-reported sleep disturbance due to noise is also considered an important parameter to factor in when considering the effect of environmental and indeed aircraft noise on sleep.

As per Halperin, 2014 (6):

> *‘‘Nocturnal air traffic causes nocturnal awakenings at levels as low as 48 dB, and physiological reactions in the form of increased vegetative hormonal secretions, cortical arousals and body movements at even lower levels, probably around 33 dB.”*

This ties in with the WHO recommendations for average suggested noise levels at night to protect health.

When an individual is ‘*annoyed’* by sleep disruption this amplifies the adverse health effects that can occur in the long term.

Kroller et al commented in 2018 (7), that negative effects on the integrity of blood vessels was mainly observed if the noise was intermittent and during the sleep phase, which is characteristic of aircraft noise.

Again, relating to noise and sleep and also making reference to the medical expert report supplied by Dr Penzel, the group have employed the expertise of Dr John Garvey, a specialist in sleep disorders and Medical Director of the largest sleep service in the Republic of Ireland (8).

He describes the importance of stating that the adverse effects of environmental noise on sleep have been recognised in European policy and the dose effect relationships on health clarified:

> *“Annex III of the Environmental Noise Directive (END), referring to the provision of dose-effect relations for the assessment of harmful effects caused by environmental noise, has been amended with the ratification of Commission Directive (EU) 2020/367 (9).*
>
> *It describes how harmful effects from environmental noise may be calculated for ischemic heart disease (IHD), high annoyance (HA), and high sleep disturbance (HSD) for road, rail, and aircraft noise for EU Member States.”*

'The International Classification of Sleep Disorders,' (10) makes reference to the possibility of environmental noise representing enough sleep disturbance to qualify as a disorder:

> ***"****The condition is typically characterised by complaints of,*
>
> *sleep initiation and/or maintenance that are the direct result of an environmental factor."*

According to the proposed figures for the relevant action provided and magnitude of effect on the population, **9,380 people will be significantly affected**, **553 very significantly** and **176 profoundly** affected in an adverse manner if the suggested operations come into place.

These effects will be chronic, especially if significantly affected, again referring to the EIAR on human health,

> *"High magnitude impacts will typically be long-term in nature, resulting in the permanent change of the study area's Current State of the Environment".*

Due to the intermittent nature of aircraft noise, frequency and pattern play a role in sleep disturbance, as per Dr Garvey,

> *"Aircraft noise, being intermittent, affects sleep primarily based on the number and acoustical properties of individual noise events, including maximum SPL (sound pressure level) and spectral composition".*

This is particularly relevant in the case of the proposed noise quota, which has no fleet movement limit which will lead to unrestricted movements at night and a worsening noise problem for those living under this flight path.

He also refers to the fact that certain members of society are obviously more vulnerable to the effects of aircraft noise, particularly at night:

"The impact of aircraft noise on sleep is influenced by situational factors such as sleep depth and individual factors like noise sensitivity. Certain populations, such as the elderly, children, shift-workers, and those who are ill, are particularly vulnerable to noise-induced sleep disturbance".

"Repetitive noise-induced arousals negatively affect sleep quality by altering sleep structure, leading to delayed sleep onset, early awakenings, reduced deep and rapid eye movement (REM) sleep, and increased time spent awake or in superficial sleep stages. Deep and REM sleep are crucial for overall sleep recovery and memory consolidation."

Regarding the definition of what an awakening is, Dr Garvey comments,

"Dr. Penzel acknowledges a relationship between noise events and arousals but defines an awakening as "transitions from sleep to wakefulness which last at least 30 seconds." I note, that although the AASM do not provide a definition of awakening, his definition is at odds with the scoring guidelines. A threshold of at least 15 seconds would make more sense because if more than 15 seconds of a 30-second epoch on polysomnography being scored consists of wakefulness, the 30-second epoch is scored as wakefulness.

I recognise that a specific definition of awakenings has not been provided, but from the context outlined above, I would contend that both polysomnographic and self-reported awakenings as identified in the review by Basner and McGuire fall under the umbrella term of "awakenings" in the review but in terms of calculating the "probability of additional awakenings" it refers to polysomographic awakenings, specifically to transitions from sleep stages REM, S3, or S2 to the sleep stages S1 or awake".

Dr Garvey also states,

> *"Furthermore, Dr. Penzel's assessment of the probability of additional awakenings being an appropriate measure of the effects of aircraft noise is at variance with the WHO ENG guidelines which, under critical health outcomes, clearly describe the effects on sleep as "the most meaningful, policy-relevant measure of this health outcome.* ***Self-reported sleep disturbances are a very common problem in the general population: they affect quality of life directly and may also lead to subsequent health impediments.*** *Effects on sleep may be in the causal pathway to cardiovascular disease" and clearly includes the probability of additional awakenings as an identified critical health outcome measure".*

There is reference made to the method in which the average number of additional awakenings is calculated. This has the resultant effect of skewing the appearance of those that will be significantly adversely affected by nighttime aircraft noise due to this relevant action.

> *"Bickerdike Allen Partners state that "When considering the expected number of nightly awakenings given in Section 3.4 it should be noted that they relate to a population of over 1million people, and that awakenings occur irrespective of the any aircraft noise events. The WHO notes a healthy adult briefly awakens ca. 20 times during an 8 h bed period. Combining these values gives an underlying level of awakenings of ca. 20 million. In comparison to this the additional awakenings due to aircraft noise are much lower."*

This grossly misrepresents the significance of additional awakenings which may arise due to aircraft noise.

Firstly, of the over 1 million people in the area, those with an annual dB Lnight <40 should be affected negligibly and those with an annual dB Lnight <45 to a very low degree, if at all, in terms of additional awakenings due to single noise events as the effect of a change in noise level tends to increase with the absolute level of noise experienced.

> "**Rather than presenting the additional awakenings in the context of the whole noise study area, it would have been more appropriate and informative to also present the additional awakenings at the individual representative locations** and in the context of the local area population, similar to how LA max noise levels are presented".

Dr Garvey describes the peak-end rule. This relates to the human ability to remember an occurrence or experience based on its most extreme or intense point.

Notably noise has a more significant effect in the morning when '*sleep pressure*' is lower.

> *"The peak-end rule, a psychological principle introduced by Nobel laureate*
>
> *Daniel Kahneman suggests that people tend to judge and remember an experience based on its most intense point (peak) and its ending.*
>
> *Noise exposure has the most significant effect on self-reported sleep quality in the morning, when sleep pressure is lowest".*

The significance of this is that the daa are seeking to use the North Runway during the shoulder hours of 11pm-12am and 6-7 am.

> *"The increase in noise at the beginning of the night could potentially hinder the process of falling asleep but more importantly, due to the peak-end rule, the proposed change could have a disproportionate negative effect on sleep quality overall due to proposed change between 6 AM and 7 AM".*

He also comments,

> *"It is now likely that negative framing of the proposed changes (flight path divergence and now increased hours of use of the north runway during nighttime hours) by local residents will increase their perception of disturbance and the negative consequences on health and sleep".*

It is worth noting at this point the recommended amount of sleep for adequate health on a nightly basis. For an adult, the National Sleep Foundation (11) recommend an average of 7-9 hours per night.

For children the average time is even longer, ranging from, for a young child 10-13 hours, to a teenager being 8-10 hours.

It is clear that these hours of sleep in the shoulder hours with the proposed Relevant Action will be seriously affected by those, greater than 10,000 receptors, that are significantly to profoundly exposed by this change.

In conclusion sleep is disrupted from significant aircraft nighttime noise.

2.4 Effects of Environmental Noise on Children

The effects of aircraft noise on children have been well documented in the literature, with the 2 most noteworthy studies of the effect of aircraft noise on children's health being the RANCH cross sectional study (2006) and the NORAH study (2016) which was a comprehensive longitudinal review of environmental noise effects on health.

The acute effects are fatigue and difficulty with concentration, however the chronicity to these adverse health effects is worrying.

The RANCH (Road traffic and Aircraft Noise and children's Cognition & Health) study (12) was a cross sectional study from 2006 of 2844 school going children in the areas of London Heathrow, Schiphol (Amsterdam) and Barajas (Madrid) airports.

There was an exposure response relationship between aircraft noise and '*poorer reading comprehension and recognition memory*'. Most notably there was no particular threshold at which noise effects began as the association was a linear one.

The more recent NORAH study (13) was a longitudinal study which looked at the varying effects of aircraft noise exposure to inhabitants. This ranged from cardiovascular and sleep effects as well as children's health and academic outcomes for chronic noise exposure. For the purpose of identifying the effects of aircraft noise on children,1243 children from 29 schools in the Frankfurt region were included.

Of note in areas exposed to high levels of noise, or significantly affected areas, children were found to have a delayed reading age of 1 month per 10 dB increase in continuous sound level.

Cook et al, 2020 (14) in an Australian longitudinal study, stated that children with persistent sleep problems in the first postnatal year have increased risk of anxiety and emotional disorders at age 10.

Williamson et al, again in 2020 (15), in the journal for child psychology and psychiatry, looked at a cohort of over 5000 children recruited at birth and their sleep patterns analysed, outcomes measured at 10-11 yrs.

Outcomes looked at emotional/behavioural aspects and health related quality of life, cognitive skills and academic achievement. Negative effects were seen in emotional and behavioural characteristics as well as increased internalisation. Cognition was not affected.

Ednick, 2009 (16) and Mindell 2017 (17), looked at sleep in first 2 years of life, Mindell states there may be an association with less sleep and social/emotional problems and internalising issues.

The World Health Organisation (WHO), as previously mentioned and stated in the EIAR, recommend an average day time noise level of 45 dB and nighttime of 40 dB (2).

The European guidelines recommend an interim level of 55dB; however this is meant to be just that, an interim level and not an end goal. The WHO state clearly that any nighttime noise level above those recommended will have significant adverse health effects on those that are exposed.

These effects include sleep deprivation, but also there is a subconscious effect of noise on our bodies as we sleep, and this is where serious metabolic long term health outcomes become an issue.

2.5 Cardiovascular and Metabolic Disease and Aircraft Noise

> *"Many studies have found that it is biologically plausible that environmental noise exposure **might influence** CVD."*

From the literature described in detail below this is **definitely** the case.

Nighttime aircraft noise is strongly associated with cardiovascular disease, primarily hypertension and diabetes mellitus.

The WHO evidence stemmed from literature collated over a 15-year period of time from the year 2000 until 2015. There was call for more longitudinal studies. The Nature review of Munzel et al from 2021 (44), clearly displays additional new relevant literature on the effect of transportation noise health and its mechanism of action.

Chronic exposure to environmental noise causes 12,000 premature deaths and 48,000 incident cases of IHD annually in Europe, EEA 2020, as per the European Environment Agency, 2017 (18).

As far back as 1981, Peterson et al (19), exposed Rhesus monkeys to continuous levels of noise over a 9-month period. The findings were that the monkeys blood pressure did not return to normal after the noise stopped. This implies that once increased, the increment in blood pressure cannot be reversed.

The mean sound pressure level was 85 dB, causing a sustained 30mmHg rise in blood pressure.

Babisch et al in the Speedwell study, 1993 (20), found significant associations between noise levels from 51-70db over a 6-22 hrs period and cholesterol, increased blood viscosity and glucose as well as raised systolic and diastolic blood pressure.

Lusk in 2004 (20) investigated the effect of environmental noise, on 46 assembly plant workers who wore holter monitors for one shift. It was found that increasing noise levels were positively associated with increases in systolic, diastolic blood pressure as well as heart rate.

A systematic review of research relating to sleep quality was carried out by Cappuccio et al (22) in 2010. Prospective studies were also included if they had greater than 3 years follow up. The findings were of a significant relative risk of 1.84 associated with a deficiency in the quality and quantity of sleep in the development of type 2 diabetes.

Schmidt et al in 2013 (23), performed polygraphy on 75 young volunteers exposed to noise at home and a control for one night. The number of movements for those exposed was 30 or 60 and the average SPL was 60dB. In adults with no preexisting medical conditions increasing level of noise were seen to positively correlate with increased adrenaline release and endothelial dysfunction. it is this endothelial dysfunction that contributes to hypertension and cardiovascular disease.

The WHO guidelines covered research for 15 years from 2000 to 2015. Studies published since would further support an increase in the risk of cardiovascular and metabolic disease from transportation noise previously less supported.

Monrad et al (24) looked at a population cohort of 57,053 individuals, 2,962 developed new onset atrial fibrillation within a defined time period. They concluded that exposure to residential road traffic noise may be associated with an increased incidence of A fib in the population.

Héritier et al, 2017 (25), found that death from ischaemic stroke was strongly associated with aircraft noise. There was a linear pattern, with baselines of 40dB for road a rail noise. Greater numbers of men than women were affected.

Due to the number of newer well designed and longitudinal studies based on environmental noise, the 2018 WHO guidance needs to be updated.

In 2020 the UK Department for Environment Food and Rural affairs requested that a scoping review (26) of the effect of environmental noise on sleep cardiovascular and metabolic function be undertaken. This was to advise the Interdepartmental Group on costs and benefits Noise Subject Group on whether more recent research since 2015 warranted newer recommendations relating to environmental noise.

Making reference to the systematic review of Basner and Mc Guire (27), it is clear that self-reported and objective measures for environmental noise are a valuable source of valid information. However, the strength of evidence for environmental noise apart from road traffic noise for sleep disturbance was considered low. A new review of the literature from 2015-2019 revealed moderate to high quality evidence relating to annoyance for road and rail traffic and the DEBATs and NORAH study would also suggest that based on outcomes the WHO guidelines need to be updated.

Newer evidence shows more convincing information relating to aircraft noise and annoyance than sleep disturbance.

Fuks et al (28) reported in 2017 that air pollution - PM 2.5 and traffic noise was positively associated with an increased self-reported incidence of hypertension.

The risks of heart failure and arrhythmia were not evaluated in the 2018 WHO guidelines.

Five longitudinal studies have since been evaluated which show a consistent association between road rail and air traffic noise and heart failure and death with a 2-8% increased risk per 10dB(A).

Héritier, reported in 2017 (29) that during a 15 year follow up cohort study that ischaemic stroke was associated with aircraft noise.

Again in 2017 Sorenson (30) noted that chronic exposure to NO2 and road traffic noise was linked with a higher risk of heart failure, especially among men and the higher the pollutant the higher the risk.

A 1.6% increased risk for the development of heart failure and hypertensive heart disease was found by Seidler in 2016 (31) for exposure to aircraft noise, for every 10dB increase in the 24-hour continuous noise level.

Carey (32) looked at greater than 200,000 inhabitants in the greater London area between the years of 2005 and 2011 and published in 2016 the incidence of new onset cardiorespiratory disorders which occurred in this population group. Environmental pollutants included both noise and PM2.5. The findings pointed more towards exacerbation of possibly underlying disease as opposed to underlying chronic disease.

Night-time aircraft noise exposure has been associated with stress induced cardiomyopathy, also known as Takotsubo syndrome (33).

Sleep disruption or disturbance is linked with the adverse effects of noise on the cardiovascular system.

Basner at al commented in 2014 (34), that annoyance is a common response in a population to environmental noise. The physical manifestations of this can amount to disrupting activities of daily living, sleep and rest and can be associated with increased stress and fatigue.

The particular circumstances of any individual can add to the negative effects of annoyance and arousals in at risk populations. This would include those with chronic disease, the elderly, children and shift workers. Repeated noise arousals interfere with sleep quality.

The WHO recommendations are for an average of 40 dB outside but a recommended interim level of 55dB LAeq is suggested while working towards this. The WHO also states that any average noise level above 55dB outside is considered:

> ***"Increasingly dangerous for public health."***

There is evidence to suggest that disruption of the circadian pathways due to sleep disruption is associated with a predisposition to obesity and metabolic disease, such as diabetes, McHill, 2017 (35).

4 prospective studies since 2017 which strengthen the association between environmental (road traffic noise) and diabetes.

Dimakopoulou, 2017 (36) followed up on the individuals who partook in the HYENA studies in Athens from 2004-2006 in 2013. There were significant findings that exposure to aircraft noise at night had an odds ratio per 10dB increase in noise of 2.63 for hypertension (blood pressure) and 2.09 for cardiac arrthymiae.

Clark 2017 (37) looked at the influence of transportation noise over a 5-year period in a prospective cohort population-based study in Vancouver. Another positive association was found between transportation noise and diabetes.

Eze, 2017 (38), again displayed that there is a positive association with environmental noise and the incidence of diabetes. Stronger effects of daytime noise were seen amongst those that reported poor quality of sleep or slept with an open window. It is also stated that noise from transport may play more of a role than air pollution in the development of diabetes.

Ohlwein, 2017 (39) showed from the Heinz Nixdorf Recall study of 3,396 participants that again chronic exposure to road traffic noise may increase the incidence of type 2 diabetes, regardless of air pollution exposure.

28,731 female Danish nurses were recruited in the late 90’s and were connected with the National Diabetes Register to look for incidence cases of diabetes between 1995 and 2013 (40). Jorgenson et al in 2019, found an association between chronic exposure to road traffic noise and urban areas.

To add to the risk factors for the vulnerable and cardiovascular disease, Xia et al , 2018 (41) highlighted that perceived and objective social isolation are additional risk factors for death and hypertension.

Aircraft noise interferes with sleep and chronic exposure is linked with an increased risk for high blood pressure and myocardial infarction in the population. One particular study involved

75 young volunteers exposed to two different types of noise scenario and a control at home. Polygraphy results showed noise had a negative effect on sleep quality and increasing noise levels of aircraft at night interferes with endothelial function stimulating the release of adrenaline on a linear scale, Schmidt 2013, (42).

The effect of environmental noise on endothelial cells at molecular level is highlighted in the study by Daiber et al, 2019 (43). It is this endothelial dysfunction that is associated with hypertension.

This stress response leads to increased circulating catecholamines, increased blood viscosity, and clinically manifests itself as raised blood glucose, blood pressure and activation of the coagulation cascade.

Osborne (44) published a study in 2020 which showed how the amygdala in the brain which is responsible for emotion and stress responses provides a link for a heard noise stimulus and eventual vascular inflammation. The louder the noise, per 5 dB increase, the greater the amygdalar activity found and the greater the risk of a major adverse cardiovascular event (MACE).

As part of Munzel's nature review, 2021 (45), there is reference to a series of field studies on the effects of aircraft noise on vascular, sleep and metabolic function including increased cortisol release and inflammatory markers. Nighttime aircraft noise was seen to have a negative effect. (Schmidt 2013) (46).

Munzel in 2018 (47), highlighted that nighttime noise in particular has a more detrimental effect in term of the physiological response to aircraft noise. This includes the pathway involving the synthesis of nitric oxide and ultimately affecting the dilating capacity of blood vessels leading to hypertension. This in turn renders an individual more susceptible to vasoconstriction which can occur due to the release of inflammatory mediators and stress hormones such as adrenaline.

Schmidt had already shown in 2015 the association between nighttime aircraft noise and those who already had existing or risk factors for cardiovascular disease. Sound Pressure Levels were measured of 46.9 ± 2.0 dB(A) for the 'noise' nights and 39.2 ± 3.1 dB(A) for the control nights. It was found that the effect on endothelial/vascular function was independent of subjective annoyance and sleep quality. There was a subjective reduction in sleep quality.

Cardiac biomarkers are affected by aircraft noise. Munzel et al in 2017 (48), developed an animal study to look at the effects of continuous aircraft noise on mice, 72dB(A) and peaks of 85dB(A) over 1,2 or 4 days. There was a significant increase in stress hormones and inflammatory markers. Interestingly mice that were exposed to white noise did not have the same response. This highlights the significance of the pattern and frequency of aircraft noise in particular and how this contributes to the cardiovascular effects seen as a result.

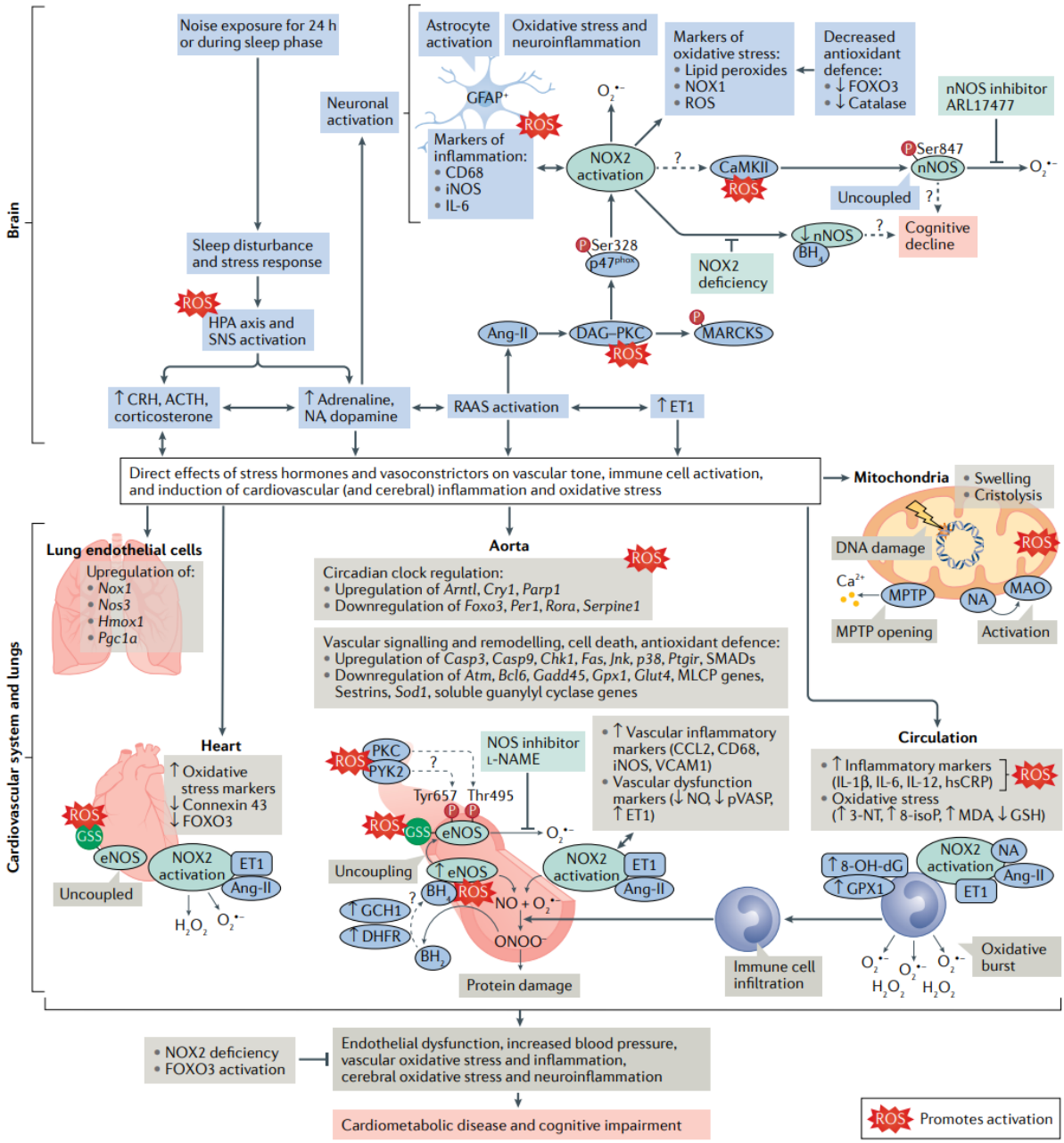
Historically, Hink et al, 2001(49), stated when blood glucose is high in diabetes mellitus it activates certain protein kinases as well as super oxides. Diabetes was induced in rats and led to altered endothelial function as well as a reduction in the bioavailable nitric oxide in the aorta of a diabetic- this is similar to environmental noise.

Munzel et al, 2020 (50), as part of their review, looked at the effect of tobacco smoking and other forms of smoking on endothelial function, tobacco smoking being a known major risk factor for cardiovascular disease.

The mechanism of action affecting the bioavailability of nitric oxide, necessary for vasodilation, being similar to the effect of noise also.

Below diagram is from Munzel et al's 2021 'Nature' review, '*Transportation noise pollution and cardiovascular disease*,' vol 18, pg 630.

This details how noise can activate the sympathetic nervous system leading to a cascade of metabolic events that affect the cardiorespiratory and central nervous systems.



2.6 Summary

In summary the main points of the additional information on the effects of the proposed relevant action are unfortunately lacking in substance and factual accuracy.

The WHO recommendations from 2018 are supported even more so now, due to the emergence of newer evidence surrounding the effects of aircraft noise on health.

The average noise level of 40dB at night is one that should be the goal for mitigation measures as levels above this are associated with adverse effects on health (as opposed to 55dB).

It is clear that aircraft noise will have an overall detrimental effect on the health of those that are at least significantly affected by proposed relevant action.

Relating to sleep, both our expert on noise and the literature agree that noise at night will affect sleep quality and duration.

In a child this can be associated with delays in academic performance, anxiety and depression.

The effects on cardiovascular and metabolic function from aircraft noise, both day and night are indisputable. There is a particularly worsened effect of nighttime aircraft noise exposure on health as opposed to that during the day.

Long term with chronic aircraft noise exposure there is an increased risk of cardiovascular disease, diabetes and worsening of preexisting medical conditions.

Vulnerable residents, including the elderly and children, are more susceptible.

The proposed changes involve a total of approximately 10,000 people that will be at least significantly affected by nighttime aircraft noise.

Given the fact that noise at night is so detrimental, it is incredulous that due to change in flight paths over unmitigated communities, a large majority of these individuals should be subjected to even more noise.

The noise quota system will not 'solve' the noise problem. It has the potential due to an absent fleet movement limit to make noise for those living under the flight paths much worse at night, due to the frequency and pattern of aircraft noise.

The diluted manner in which the increased probability of awakenings is presented undermines the true magnitude of the effect on those that will be at least significantly affected.

The peak-end rule should be remembered, as these proposed changes are going to seriously affect those under the flight paths of the north runway during the additional proposed hours of use, again bearing in mind again that these flights are occurring over unmitigated homes.

This proposed Relevant action is not creating an environment '*where wellbeing is valued and supported at every level of society and is everyone's responsibility'* (Healthy Ireland Framework).

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3.0 Quantification of Impacts on Future Growth

3.0 What has changed

This is a new chapter focusing on the addendum by Mott MacDonald to their June 2021 report. It critiques the revised Annual Traffic Forecast, the relevance of the 32m passenger cap and how the daa are trying to reinterpret the cap despite receiving clear guidance from Fingal County Council on their interpretation for enforcement purposes. It also provides proof of the upcoming breach of the cap again this month. It refutes the arguments by Mott MacDonald on increased cargo movements and highlights issues with the aircraft schedules. This chapter also highlights the lack of evidence underpinning Mott MacDonald's claim of an earlier fleet modernisation relative to the 2021 EIAR.

3.1 Addendum from Mott MacDonald

The daa provided an addendum to the Mott MacDonald report from June 2021. This update is labelled as Addendum V1.0 and dated September 2023. The addendum states that the key differences with the June 2021 study are:

- New annual air traffic forecast inputs
- Updated airline fleet renewal information and forecasts
- Changes in the Business schedule

3.2 Annual Traffic Forecasts

On slide 4 of the Mott MacDonald report it compares the June 2021 forecast with the new May 2023 forecast. What stands out straight away is the 2023 forecast which is listed as 31.9 million. Note this is an unconstrained forecast. This forecast is not accurate, and we contend that this has been intentionally manipulated so the Board are not aware of the breach of the 32m passenger cap in 2023. The daa already breached the cap in 2019 and so have already carried out unauthorised development at Dublin Airport. Even though this breach was reported to Fingal County Council, no follow up action was taken.

Here is the press release from the daa's website where they openly boast about the numbers :

https://www.dublinairport.com/latest-news/2020/01/29/dublin-airport-welcomed-32.9m-passengers-in-2019

"***Dublin Airport welcomed a total of 32.9 million passengers during 2019, setting a new record for traffic at the airport***".

A new enforcement complaint has been lodged with Fingal County Council and a warning letter has been sent to the daa.

It should be noted that in September 2019, the daa submitted a planning application (F19A/0449) to increase passenger numbers from 32mppa to 35mppa. However, they withdrew the application in June 2020. There has been no attempt since then to apply for planning permission to increase passenger numbers beyond 32m.

3.3 History of 32m passenger cap

Both Condition 3 of An Bord Pleanála Ref. **PL06F.220670** (Multiple infrastructure permission including Terminal 2) and Condition 2 of An Bord Pleanála Ref. **PL06F.223469** (Extension to Terminal 1) provide for a combined terminal passenger capacity of 32 mppa.

> ***Condition 3****: The combined capacity of Terminal 2 as permitted 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.*
>
> ***Condition 2:*** *The combined capacity of Terminal 1 (including the extension authorised by this grant of permission) and Terminal 2 granted permission under planning register reference number F06A/1248 (An Bord Pleanála appeal reference number PL 06F.220670) 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.*

As noted above the daa tried to increase capacity to 35m in 2019 but withdrew the application.

In 2018, the Dublin Airport Authority made a request to An Bord Pleanála under S.146A to amend the wording of Condition no. 3 (**PL06F.220670)** to remove connecting passengers from the scope of the condition. The amended wording sought to include the words highlighted in bold as follows:

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

ABP's Direction of August 2018 stated:

> "*It is considered that the alteration sought would be material in planning terms, and cannot, therefore be considered under S.146A of the Act. The Board considered that the proposed alteration would enable greater throughput of overall passenger numbers*

through the airport. This greater level of activity would have material planning consequences (in terms of movement and access to the airport, airport capacity, and also in relation to planning policy relation to the airport) and would go beyond what was permitted in the permission granted."

The decision on the S.146A application confirms that the limit of 32mmpa applies to **any** passenger type in the terminal buildings.

In September 2019, the daa made an application to Fingal County Council seeking a declaration under section 5 (**FS5/036/19**) on whether development is or is not exempted development. The development consisted of the following:

"*Three questions in relation to the use by passengers of the airport in excess of 32 million passengers per annum.*

(a) Is the use of the 'airport' in excess of 32 million passengers per annum (mppa) constitute 'development', if the combined capacity of Terminal 2 as permitted together with Terminal 1 does not exceed 32 mppa and if so, is it exempt development?

(b) Is the use of the 'airport' by up to 3 million connecting passengers in excess of 32 million passengers per annum (mppa) constitute 'development' if those connecting passengers are facilitated by the separately permitted transfer facility and the combined capacity of Terminal 2 as permitted together with Terminal 1 does not exceed 32 mppa?

(c) Currently a connecting passenger using Dublin Airport is double counted, as both an arriving and department passenger (for the purpose of aviation security measures). If a connecting passenger is counted singly for the purposes of planning, is this development, and if so, is it exempt development?"

The decision by Fingal County Council was to refer it to An Bord Pleanala.

The question to ABP was whether the 3 questions in FS5/036/19 in relation to the use of in excess of 32mppa is or is not development or is or is not exempted development

ABP stated that:

> "*Use of the "airport" by up to 3 million connecting passengers in excess of 32 million passengers per annum (mppa), if those connecting passengers are facilitated by the Pier 4 passenger transfer facility and the combined capacity of the facility together with Terminal 2 as permitted and Terminal 1 would exceed 32 mppa, would contravene condition no. 3 of PL06F.220670, and is therefore not exempted development."*

Therefore, the daa need to apply for planning permission to increase passenger numbers beyond 32mppa and the 32m cap still applies.

3.4 Pre-planning Document

In a pre-planning document dated February 25th 2020 (reference Number: PPC 106276 & PPC 106336) between the daa, ANCA and Fingal County Council a discussion arose in relation to the interpretation of the 32mppa cap with regard to types of passengers:

This is very clear

- Discussion on the interpretation of the 32mppa passenger capacity cap with regard to types of passengers, in particular the transfer/ transit passengers.
- The P&SI Dept advises the applicant that, with reference to ABP decisions and known international, European and national methods of counting passengers at airports, the 32mppa passenger cap included in Condition 3 of F06A/1248 (PL 06F 220670) and Condition 2 of F06A/1843 (PL 06F 223469) is considered to be a cumulative, annual figure comprising all passengers using (traveling to, through and from) Dublin Airport.
- The P&SI Dept advises the applicant that as the 32mppa cap is considered to be all inclusive figure, it is not considered possible/ practical for planning assessment and subsequent enforcement purposes, to make any differentiation between different types of passengers.

This is very clear advice from the Planning and Strategic Infrastructure Dept that the 32mppa is considered to be a cumulative, annual figure comprising all passengers using (traveling to, through and from) Dublin Airport. There is to be no differentiation between different types of passengers.

Therefore, the daa cannot now turn around and state that their interpretation excludes transit passengers and only counts transfer passengers singly as alluded to in this article:

https://www.travelextra.ie/dublin-airport-on-course-hit-its-cap-of-32m-passengers-on-december-17/

They knew back in February 2020 how the Planning Authority interpreted the 32mppa cap.

3.5 2023 Flight Movements

Based on data from EuroControl (https://www.eurocontrol.int/Economics/DailyTrafficVariation-Airports.html), Dublin Airport has handled 205,676 flights for the year to October 31st 2023. In the same period in 2019, Dublin Airport handled 203,779 flights. Therefore, Dublin Airport handled 1,897 more flights up to October 31st 2023 compared to the same period in 2019.

Based on EuroControl's data for 2019, 238,047 flights were handled at Dublin Airport in 2019, and with 32.9m passengers, this equates to an average load factor of **138** passengers per flight.

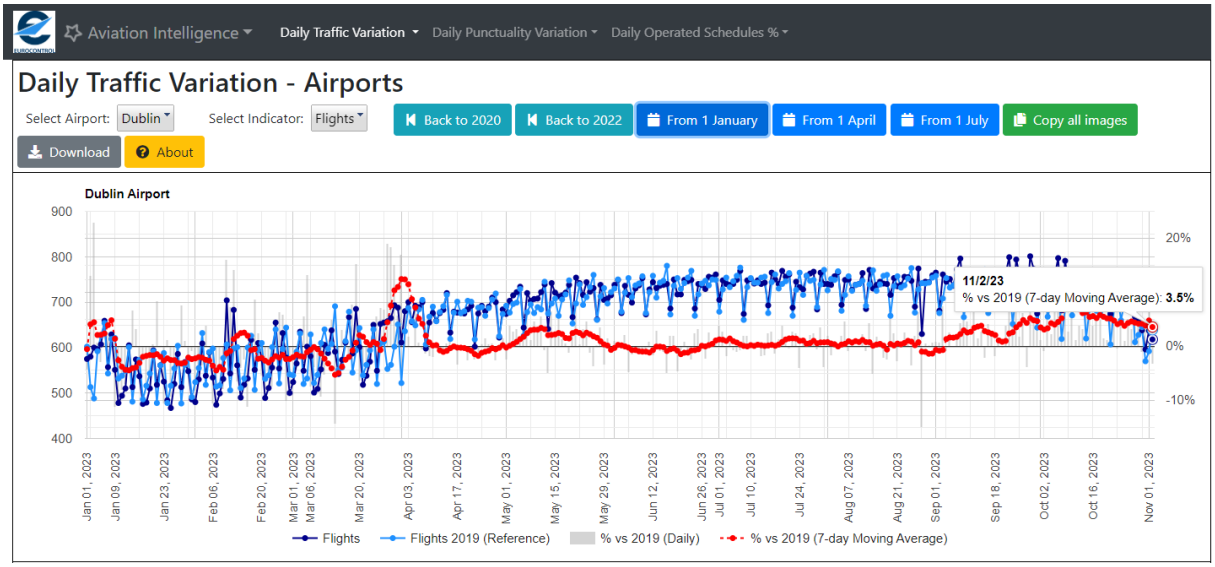
At a load factor of 138, 1,897 extra flights equates to approximately 261k passengers. Therefore, even if Dublin Airport remained at 2019 passenger levels for the remainder of the year it would breach the cap by almost 1.2m passengers.

In order not to breach the cap, Dublin Airport needs to reduce flights by at least 100 per day compared to 2019 levels.

Dublin Airport is on course to breach the 32m cap in early December.

Dublin Airport needs to reduce flights by 100 per day compared with 2019 levels in order not to breach the cap. And this needs to start immediately. The longer it's left to reduce flights, the more flights that will need to be reduced as time goes on.

EuroControl is currently showing that the 7-day moving average of flights in 2023 compared to 2019 is running at +3.5%. Therefore, it's currently operating at higher daily levels than at the same time in 2019 and at this rate the 32m passenger cap will be breached at an earlier date.



Year to Dec 10th, Dublin Airport is +1% ahead of 2019 according to EuroControl:

https://ansperformance.eu/traffic/

Airports

Day (10/12) | Week (04 to 10/12) | Y2D (01/01 to 10/12)

#	AIRPORT	ICAO	AVG. FLIGHTS	vs 2022	vs 2019
2	Amsterdam	EHAM	1,258	+10%	-10%
18	Antalya	LTAI	621	+15%	+7%
13	Athens	LGAV	655	+14%	+7%
7	Barcelona	LEBL	876	+12%	-8%
27	Berlin Brandenburg	EDDB	480	+7%	+93%
25	Brussels	EBBR	518	+8%	-18%
38	Cologne/Bonn	EDDK	324	-2%	-17%
16	Copenhagen	EKCH	629	+13%	-14%
37	Dubai	OMDB	331	+21%	+20%
12	Dublin	EIDW	664	+14%	+1%

Update to December 10th:

The additional number of flights in 2023 compared to 2019 is now at 2,159 as of December 10th, 2023. This equates to an additional 297.9k passengers at a load factor of 138. As it currently stands, the airport is forecast to handle 33.3m passengers, assuming the remainder of the year stays at 2019 levels.

Mr Kenny Jacobs has publicly announced on the Dublin Airport website that Dublin Airport will not breach 32m passengers in 2023:

https://www.dublinairport.com/latest-news/2023/11/03/2.8-million-passengers-through-dublin-airport-in-october

> ***"Until planning permission to grow beyond 32 million is granted, daa will continue to manage the passenger capacity through the terminals at Dublin Airport to ensure that current planning restrictions are not breached."***

There has been no attempt to curb passenger numbers in 2023 based on EuroControl's figures and therefore these statements from Mr Jacobs can only be interpreted as trying to mis-lead the Board and Irish people. In fact, since September, the daa have been trying to report passenger numbers net of transfer and transit passengers in order to artificially reduce the numbers and mislead the planning authorities and the Irish public. An Bord Pleanála, as shown above, has already made two rulings in relation to the passenger cap and as it stands the daa must include transfer and transit passengers. Fingal County Council's position on passenger types and numbers was also made abundantly clear to the daa in the pre-planning meeting in February 2020.

3.6 Daa's Passenger Numbers

On the daa's corporate website, a section is devoted to 'Investor Relations' - https://www.daa.ie/media-centre/investor-relations-2/. At the bottom of this section, passenger statistics are provided on a monthly basis:

Passenger Statistics

- Passenger Statistics November, 2023
- Passenger Statistics October, 2023
- Passenger Statistics September, 2023
- Passenger Statistics August, 2023
- Passenger Statistics July, 2023
- Passenger Statistics June, 2023
- Passenger Statistics May, 2023
- Passenger Statistics April, 2023
- Passenger Statistics March, 2023
- Passenger Statistics February, 2023
- Passenger Statistics January, 2023

More Passenger Statistics

The latest figures for November 2023 are uploaded and available for inspection - https://www.daa.ie/wp-content/uploads/2023/12/daa-Monthly-Statistics-November-2023.pdf:

Dublin Airport - November 2023 Statistics

Region	Nov 2023	Nov 2022	% Change	YTD 2023	YTD 2022	% Change
Domestic	12,678	10,490	21%	142,996	117,447	22%
Great Britain	769,710	726,310	6%	8,712,605	7,070,828	23%
Rest of Europe	1,191,001	1,166,733	2%	17,427,641	14,819,878	18%
Transatlantic	244,484	226,130	8%	3,651,362	3,009,967	21%
Other International	80,508	65,080	24%	932,492	602,280	55%
Transit	1,235	16,206	-92%	248,957	255,954	-3%
Total Passengers	**2,299,616**	**2,210,949**	4%	**31,116,053**	**25,876,354**	20%
Commercial ATM's	16,709	16,505	1%	215,841	186,395	16%

The figures show that Dublin Airport handled 31,116,053 passengers up to the end of November 2023 (YTD 2023). This included 248,957 transit passengers. Excluding transit passengers, Dublin Airport still handled 30,867,096 passengers.

The daa's corporate website also provides access to the 2022 passenger statistics. In December 2022, 2,209,208 passengers were catered for at Dublin Airport. Even if the

passenger traffic were to remain static at December 2022's level for December 2023, Dublin Airport's passenger numbers for 2023 would be in excess to 33.3m. This is a clear breach of the 32m cap. The daa have had plenty of advance notice of this inevitable breach and were served with enforcement warnings By Fingal County Council. The Board is reminded that the daa breached the 32m cap in 2019 also. Fingal County Council did not pursue enforcement proceedings based on the 2019 breach, but the enforcement section did acknowledge that a breach occurred. Below is an excerpt from a reply from the enforcement section:



PE Planning Enforcement <Planning.Enforcement@fingal.ie>
To: You
Wed 29/11/2023 04:20

Dear Sir/Madam,

Re – Lands at Dublin Airport – Our Ref – ENF 20/012B

I refer to the above location and to correspondence regarding the same.

Having regard to the planning history of the site, submissions from complainants, submission from DAA, figures from the Department of Transport and the planning reports on these files, it is noted that while a breach of 32.9 million passengers was reported in January 2020, no further breach of the annual passenger cap occurred in the years 2020, 2021 or 2022.

Accordingly, the Council are not pursuing further Planning Enforcement action with respect to this matter. The Planning Enforcement file 20/012B is now closed.

Regards,

Fearghal McSweeney | Administrative Officer | Planning & Strategic Infrastructure Department | Fingal County Council | County Hall | Main Street | Swords | Co. Dublin | K67 X8Y2
Ph : (01) 8905000
Email: fearghal.mcsweeney@fingal.ie

Comhairle Contae Fhine Gall Fingal County Council

The 32m cap will be breached again mid-December and the Board needs to be cognisant of another intentional violation of a condition that the Board itself imposed.

3.7 Significance of breaching the 32m planning condition

It is of extreme significance if the daa breach the 32m passenger cap in 2023. In the Relevant Action planning application, the daa state in the Non-Technical Summary that:

> "*The proposed Relevant Action, if permitted, would not change any of the other conditions of the North Runway Planning Permission, nor would it affect the maximum number of passengers currently permitted to pass through the terminals at Dublin Airport.* ***This passenger throughput is currently limited to 32 million passengers per annum (mppa) and will remain so unless a new application is made to raise the limit****. Under the proposed Relevant Action, it is expected that the 32 mppa level would be reached in 2025. A separate planning application will be required to increase the number of passengers above 32 mppa*"

The Relevant Action's whole premise is based on Dublin Airport not being able to cater for 32m passengers due to Conditions 3(d) and 5. On slide 5 of the Mott MacDonald report, they have revised the number of lost passengers from 6.3m in their 2021 forecast to 3m in this September 2023 report. Note in the 2023 Addendum table that they still use a cap of 32m and show that it will be reached in 2024.

2023 Addendum – Annual Traffic Impact Summary – (millions of passengers)

	2022	2023	2024	2025	2022-2025 Total
Scenario D – 32m cap only	28.1	31.9	32	32	124.0
Scenario E – Conditions 3d/5	28.1	30.0	31.1	31.8	121.0
Difference	-	-1.9	-0.9	-0.2	-3.0

Source: Mott MacDonald analysis

Yet on the previous slide, slide 4, they show figures of 31.9m in 2023, 33.0m in 2024 and 33.8m in 2025.

Comparison of Unconstrained Annual Forecasts

	2021 Forecast	2023 Forecast	Difference
2015	25.0		
2016	27.9		
2017	29.6		
2018	31.5		
2019	32.9	32.9	-
2020	7.4	7.4	-
2021	7.9	7.9	-
2022	21.0	28.1	+7.1
2023	26.7	31.9	+5.2
2024	31.2	33.0	+1.8
2025	32.3	33.8	+1.5
2026	34.0	35.0	+1.0
2027	35.6	35.6	-
2028	37.0	37.0	-
2029	38.4	38.4	-
2030	39.6	39.6	-
2031	40.5	40.5	-
2032	41.3	41.3	-
2033	42.1	42.1	-
2034	42.7	42.7	-
2035	43.4	43.4	-
2036	44.0	44.0	-
2037	44.7	44.7	-
2038	45.3	45.3	-
2039	46.0	46.0	-
2040	46.6	46.6	-

Source: daa Centreline forecast scenarios from May 2021 versus May 2023

From the analysis above it is very clear that Dublin Airport will handle more than 33m passengers this year in 2023.

Therefore, there will be no lost passengers under 32m this year, nor in 2024, nor 2025. The daa's argument for lost passengers has been completely destroyed.

The site notice for the Relevant Action states:

> *"The proposed relevant action does not seek any amendment of conditions of the North Runway Planning Permission governing the general operation of the runway system (i.e., conditions which are not specific to nighttime use, namely conditions no. 3(a), 3(b), 3(c) and 4 of the North Runway Planning Permission) or any amendment of permitted annual passenger capacity of the Terminals at Dublin Airport. Condition no. 3 of the Terminal 2 Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No. PL06F.220670) and condition no. 2 of the Terminal 1 Extension Planning Permission (Fingal County Council Reg. Ref. No. F06A/1843; ABP Ref. No. PL06F.223469) provide that the combined capacity of Terminal 1 and Terminal 2 together shall not exceed 32 million passengers per annum."*

It is very obvious that any grant of planning permission for the Relevant Action will further breach the 32m cap contradicting the planning site notice.

As the daa have already reached 32m passenger and more, this Relevant Action is now moot and should be dismissed by An Bord Pleanála. The Relevant Action was purposely submitted with a 32m cap and a timeline up to 2025. With Dublin Airport about to breach 32m in early December of 2023, the Board has no option but to throw out the application as it is no longer valid.

The daa are at fault as they withdrew their planning application to extend the capacity to 35m in 2020.

3.8 Night Movement Demand

On slide 6 of the Mott MacDonald report, it states that:

> *"Night cargo flights grew significantly during the pandemic, from **9** on a typical night in 2019 to **24** in the baseline schedule for 2025."*

This figure of 24 cargo flights is a pure figment of the daa's imagination. Mott MacDonald's previous report had a date of June 2021, over a year into the Covid pandemic.

Dublin Forecast Night Movement Demand 23:00 – 07:00 (based on busy day schedules)

Flight Type	2019	2025	Constrained
Pax Scheduled	101	105	54
Short haul	*84*	*91*	*48*
Long haul	*17*	*14*	*6*
Pax Charter	3	2	2
Cargo	9	9	9
Scheduled sub-total	**113**	**116**	**65**
Other (ad hoc)	3	5	0
Total	**116**	**121**	**65**

That June 2021 forecast had 9 cargo flights for 2025. The daa are now expecting the Board and the Irish people to believe that the number of cargo flights will jump to 24 in 2025.

Dublin Forecast Night Movement Demand 23:00 – 07:00 (based on busy day schedules)

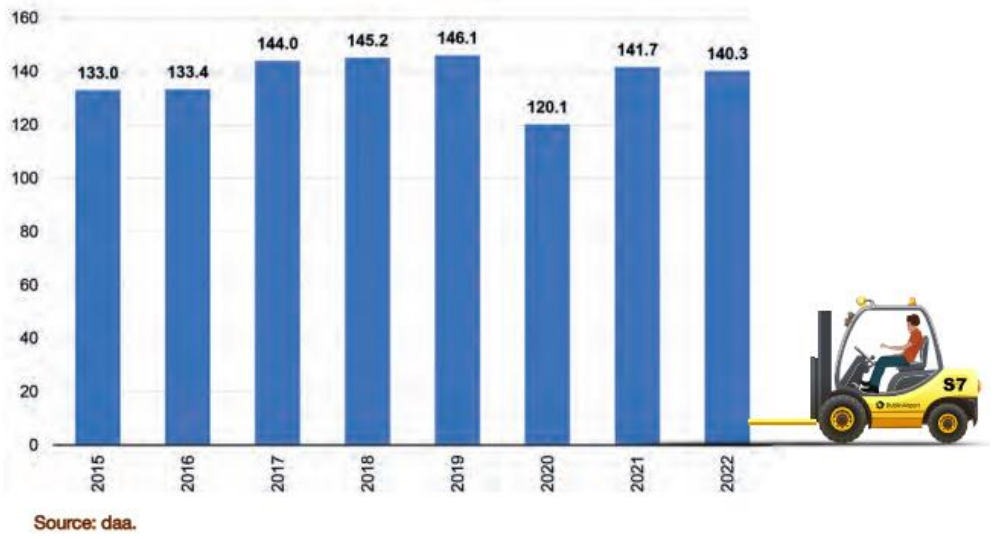
Flight Type	2019	2025	Constrained
Pax Scheduled	101	103	59
Short haul	*84*	*87*	*50*
Long haul	*17*	*16*	*9*
Pax Charter	3	2	0
Cargo	9	24	6
Scheduled sub-total	**113**	**129**	**65**
Other	3	4	0
Total	**116**	**133**	**65**

There is no basis for this figure of 24 cargo flights. A look at the number of cargo flights in 2023 during August using the website https://sbeaney.com/track/dublin_flights.html reveals that the

average number of cargo flights between 23:00 and 07:00 was **9**. The daa have provided no data or analysis as to how cargo flights are going to almost triple in number.

In the Dublin Airport Economic Impact Study report from InterVISTAS (https://www.dublinairport.com/docs/default-source/corporate/economic-impact-study-draft-3.pdf), figure 3-11 shows that cargo levels did not increase during the Covid pandemic and were still lagging in 2022. This contradicts the Mott MacDonald report.

Figure 3-11: Air Cargo Tonnage at Dublin Airport, 2015-22



Source: daa.

Of note also are the remarks by IATA that air cargo demand is still 2.4% lower than pre-pandemic levels:

https://www.travelextra.ie/air-cargo-demand-is-still-2-4pc-lower-than-pre-pandemic-levels/

3.9 Capacity Constraints

Slide 7 states that when adopting the ANCA night flying conditions (Proposed scenario) the peak departure period is 06:00-06:59. But from reviewing tables 13B-6 and 13B-8, the number of movements between 06:00-06:59 in 2025 Proposed is just 30 whereas there are 40 movements between 07:00-07:59. There is a similar trend with 2025 Permitted where 16 movements occurred between 06:00-06:59 and 43 between 07:00-07:59. In fact, based on table 13B-8 the period from 06:00-06:59 comes 15th in terms of the number of movements.

Table 13B-8: Average Annual Day Runway Usage By Hour – Westerly Operations, Proposed Scenarios

Hour	2025 Proposed		2035 Proposed	
	28L (South)	28R (North)	28L (South)	28R (North)
00:00-00:59	13	1	13	1
01:00-01:59	6	1	6	1
02:00-02:59	2	0	2	0
03:00-03:59	2	0	2	0
04:00-04:59	12	0	12	0
05:00-05:59	11	0	11	0
06:00-06:59	3	27	3	27
07:00-07:59	10	30	10	30
08:00-08:59	19	16	19	16
09:00-09:59	17	16	17	16
10:00-10:59	15	16	15	16
11:00-11:59	17	16	17	16
12:00-12:59	18	15	18	15
13:00-13:59	22	20	22	20
14:00-14:59	19	16	19	16
15:00-15:59	14	26	14	26
16:00-16:59	12	19	12	19
17:00-17:59	20	19	20	19
18:00-18:59	19	17	19	17
19:00-19:59	17	25	17	25
20:00-20:59	13	15	13	15
21:00-21:59	13	14	13	14
22:00-22:59	25	9	25	9
23:00-23:59	16	3	16	3

Note: All values rounded to nearest whole number

Based on departures alone, the hour from 07:00-07:59 has 30 departures compared to 27 between 06:00-06:59. Therefore, the period from 07:00-07:59 is the busiest period for departures and overall movements, contradicting Mott MacDonald's analysis.

3.10 Mixed Mode removal

The daa in their revised EIAR in September 2021 went to great lengths stating the need for mixed mode operations and dual departures between 06:00-08:00. At the end of each chapter in the EIAR they added the following box highlighting what changed:

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 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;
- Set out more clearly the scenarios for assessment in the EIAR;
- Respond to the latest passenger growth forecasts at Dublin Airport; and
- Reflect the revised content of the subsequent EIAR chapters.

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

The EIAR quotes the IAA who support the use of dual departures between 06:00-08:00:

3.4.5 The above description of the pattern of demand is supported by the Irish Aviation Authority (IAA) Air Navigation Service Provider (ANSP) in their submission to the Planning Authority in response to the December 2020 application: *"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 simultaneous use of runways for departures within this period serves a number of reasons, including, to the extent possible, the objective of disconnecting this high departure demand from the first peak of arrivals into Dublin which typically begins around 07:30 (local). As Dublin Airport became ever busier in the years prior to 2020, failure to achieve this objective frequently resulted in holding/delays both on the ground and in the air, as the capacity of a single runway was not sufficient to accommodate continuous consecutive departure or arrival demand. The availability of both runways for departure would alleviate this problem into the foreseeable future."*

But now in this significant information request the daa have removed this use for dual departures. In section 13.1.1 of the EIAR it states that they revert the change made in the 2021 EIAR and that segregated mode is in use between 06:00-08:00:

13.1.1 This chapter is a replacement to that in the revised EIAR submitted in September 2021 (2021 EIAR). The update is in response to a number of changes that have taken place in the interim that could affect the findings of the earlier assessment. These changes comprise:

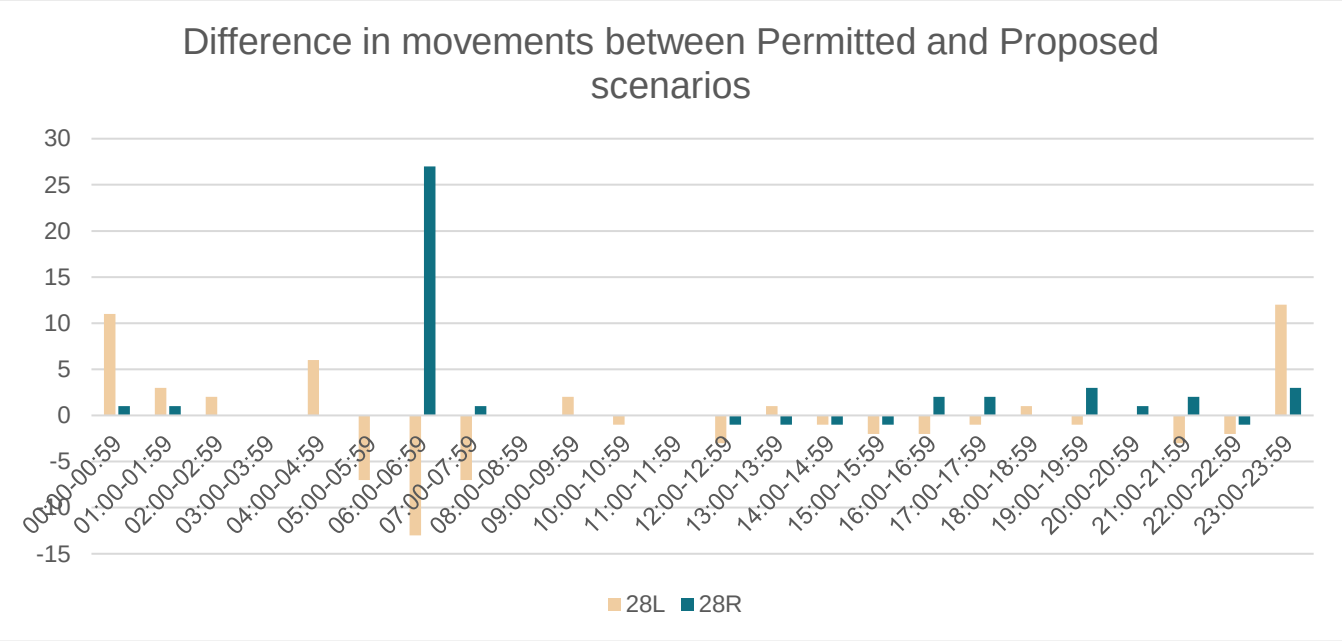
- using updated air traffic forecast data which reflects earlier fleet modernisation and recent levels of activity at the airport;
- assuming that segregated mode is in use from 06:00 to 08:00. This reverts a change made in 2021 EIAR;
- reflecting the actual flight paths from North Runway by using radar data to determine the future modelled tracks;
- reflecting changes to the distribution of the aircraft from the runways;
- the North Runway becoming operational in August 2022 which has allowed actual noise and track information to be gathered and utilised when determining departure profiles and validating the noise predictions;
- allowing for consented developments approved since the original application was made.

One has to ask the question why the daa initially didn't specify mixed mode between 06:00-08:00 in December 2020, then added it in September 2021 and now are reverting back. Mixed mode gives them the potential for higher capacity and throughput. One has to assume that the daa are trying to minimise departures on 28L Westerly and 10L Easterly to make the noise figures look better. How can one assume the daa will not use mixed mode unless the Board explicitly conditions out its use? The daa are showing that recovery has picked up faster in this EIAR yet they want to delete mixed mode use which would improve capacity. In the appeal document we argued that mixed mode is not permissible by Condition 3(a)-(c). However, the daa do not state this is their reasoning for removing it now. There are no reasons given. But this flip flopping on the use of mixed mode and their schedules shows that the daa are just trying to '*cook the books'* to give them the most favourable noise results. This is their third attempt now. How many opportunities can an applicant be given to drastically change their application? This is an important aspect that the Board needs to take on board.

3.11 Revised Flight Schedules

The data from tables 13B-6 and 13B-8 were collated together to compare runway usage between the 2025 Permitted and Proposed scenarios for Westerly Operations.

Tables 13B-6, 13B-8, New Appendix 13B	2025 Proposed		2025 Permitted		Difference	
	28L	28R	28L	28R	28L	28R
00:00-00:59	13	1	2	0	11	1
01:00-01:59	6	1	3	0	3	1
02:00-02:59	2	0	0	0	2	0
03:00-03:59	2	0	2	0	0	0
04:00-04:59	12	0	6	0	6	0
05:00-05:59	11	0	18	0	-7	0
06:00-06:59	3	27	16	0	-13	27
07:00-07:59	10	30	17	29	-7	1
08:00-08:59	19	16	19	16	0	0
09:00-09:59	17	16	15	16	2	0
10:00-10:59	15	16	16	16	-1	0
11:00-11:59	17	16	17	16	0	0
12:00-12:59	18	15	21	16	-3	-1
13:00-13:59	22	20	21	21	1	-1
14:00-14:59	19	16	20	17	-1	-1
15:00-15:59	14	26	16	27	-2	-1
16:00-16:59	12	19	14	17	-2	2
17:00-17:59	20	19	21	17	-1	2
18:00-18:59	19	17	18	17	1	0
19:00-19:59	17	25	18	22	-1	3
20:00-20:59	13	15	13	14	0	1
21:00-21:59	13	14	16	12	-3	2
22:00-22:59	25	9	27	10	-2	-1
23:00-23:59	16	3	4	0	12	3
Total	335	321	340	283	-5	38



Overall, there is a net difference of 33 extra movements in the Proposed scenario, with 5 less movements on 28L and 38 more movements on 28R.

The figures show an increase in use of 28L of 11 movements between 00:00-00:59 and 12 movements between 23:00-23:59 to handle more late-night arrivals.

The combined use of 28L and 28R in the Proposed scenario has 97 movements, whereas the Permitted scenario only has 51 movements which is 14 less than the 65-limit imposed by Condition 5 of the North Runway's planning. This highlights that the daa have failed to adequately make use of the full 65 flight limit in the Permitted scenario and therefore will falsely give the impression that a greater number of movements are disallowed.

The Proposed scenario has 30 movements between 06:00-06:59 but 40 movements between 07:00-07:59. 30 movements is well below the capability of the runways, and it is apparent that the daa are trying to lower the number of movements by removing the necessity for mixed mode operations between 06:00-08:00 in order to lessen the noise impacts presented in the EIAR. This is not credible based on previous EIAR submissions.

Below are the flight movements from the EIAR in 2021 for comparison:

Tables 13B-10, 13B-12, Appendix 13B	2025 Proposed		2025 Permitted	
	28L	28R	28L	28R
00:00-00:59	12	0	7	0
01:00-01:59	9	0	8	0
02:00-02:59	3	0	2	0
03:00-03:59	0	0	0	0
04:00-04:59	8	0	6	0
05:00-05:59	10	0	11	0
06:00-06:59	22	15	17	0
07:00-07:59	29	22	40	29
08:00-08:59	22	12	25	8
09:00-09:59	24	17	26	14
10:00-10:59	18	18	18	21
11:00-11:59	20	19	20	19
12:00-12:59	28	23	28	22
13:00-13:59	19	21	15	22
14:00-14:59	20	20	19	18
15:00-15:59	15	23	14	21
16:00-16:59	25	20	25	19
17:00-17:59	22	20	20	19
18:00-18:59	20	24	21	20
19:00-19:59	20	22	23	20
20:00-20:59	12	18	10	20
21:00-21:59	14	9	16	8
22:00-22:59	26	5	31	6
23:00-23:59	18	1	9	0
Total	416	309	411	286

In the 2021 EIAR, the figures provided show a combined figure of 725 movements in total for 2025 Proposed with 98 movements occurring between 23:00-07:00 and 627 movements occurring between 07:00-23:00.

Now compare with the new revised EIAR from the ABP further information request. There are 656 movements in total with 97 movements between 23:00-07:00 and 559 between 07:00-23:00.

What is evident is that the number of nighttime movements are practically the same, 97 vs 98, but the daytime movements are very different, 559 vs 627.

The daa have removed 68 daytime movements from the revised 2025 Proposed scenario in the EIAR supplement whilst the nighttime movements are almost identical. This proves that the daa can facilitate a greater number of daytime movements than presented in their most recent figures in the latest EIAR supplement, which contradicts the daa's claim that they are at max capacity during the daytime.

A comparison of the 2025 Proposed movements figures between the 2021 EIAR and the new EIAR supplement show that there will be 81 less movements on 28L and 12 more on 28R which is a net loss of 69 movements.

A comparison of the 2025 Permitted movements figures between the 2021 EIAR and the new EIAR supplement show that there will be 71 less movements on 28L and 3 less on 28R which is a net loss of 74 movements.

None of these losses are addressed in the EIAR supplement. The only conclusion one can draw from these reductions is that the daa are trying to manipulate the movement figures to attempt to minimise the noise impacts.

We urge the Board to take this into account.

3.12 Changes in Runway Use Assumptions

In the Ricondo CEA update, it states in section 1 that:

> *"Changes in runway use assumptions which move many of the westerly night-time departures from the South Runway to the North Runway in Scenario 02 (proposed preferential runway use measure)."*

In the BAP Noise Modelling Report, ABP RFI 27 APR 2023, it states on page 34:

> *"Under the Permitted Scenario departures to west use the South Runway at night but many of these relocate to the North Runway in the Proposed and Proposed Reduced scenarios. This consequently benefits dwellings and populations overflown by departures to the west from the South Runway."*

This relocation of departures from the South Runway to the North Runway in the Proposed scenario is very difficult to comprehend using the flight schedules provided.

Looking at the 2-hour period from 06:00-08:00, there were a total of 88 movements for 2025 Proposed in the 2021 EIAR. But in the EIAR Supplement there are only 70 movements for 2025 Proposed.

	Tables 13B-6, 13B-8, EIAR supplement Appendix 13B 2025 Proposed		Tables 13B-10, 13B-12, 2021 EIAR Appendix 13B 2025 Proposed		Difference	
	28L	28R	28L	28R	28L	28R
06:00-06:59	3	27	22	15	-19	12
07:00-07:59	10	30	29	22	-19	8

So, the daa have removed 18 movements from their busiest time period. This is difficult to comprehend as the daa have gone to great lengths to say they are at max capacity between these two critical hours and why they want to use the North Runway between 06:00-07:00.

Even 2025 Permitted in the 2021 EIAR had 86 movements. So why would they reduce the number of movements by 18? The only plausible explanation is that the daa are trying to minimise the noise impacts by manipulating the schedules and presenting them in an unrealistic manner.

In the 2021 EIAR they explicitly stated that they required Mixed mode operation between 06:00-08:00 for capacity reasons. Now they have reduced the number of movements between

06:00-08:00 by 18 without the need for Mixed mode. But in section 13B.3.18 of the EIAR Supplement Appendix, it states:

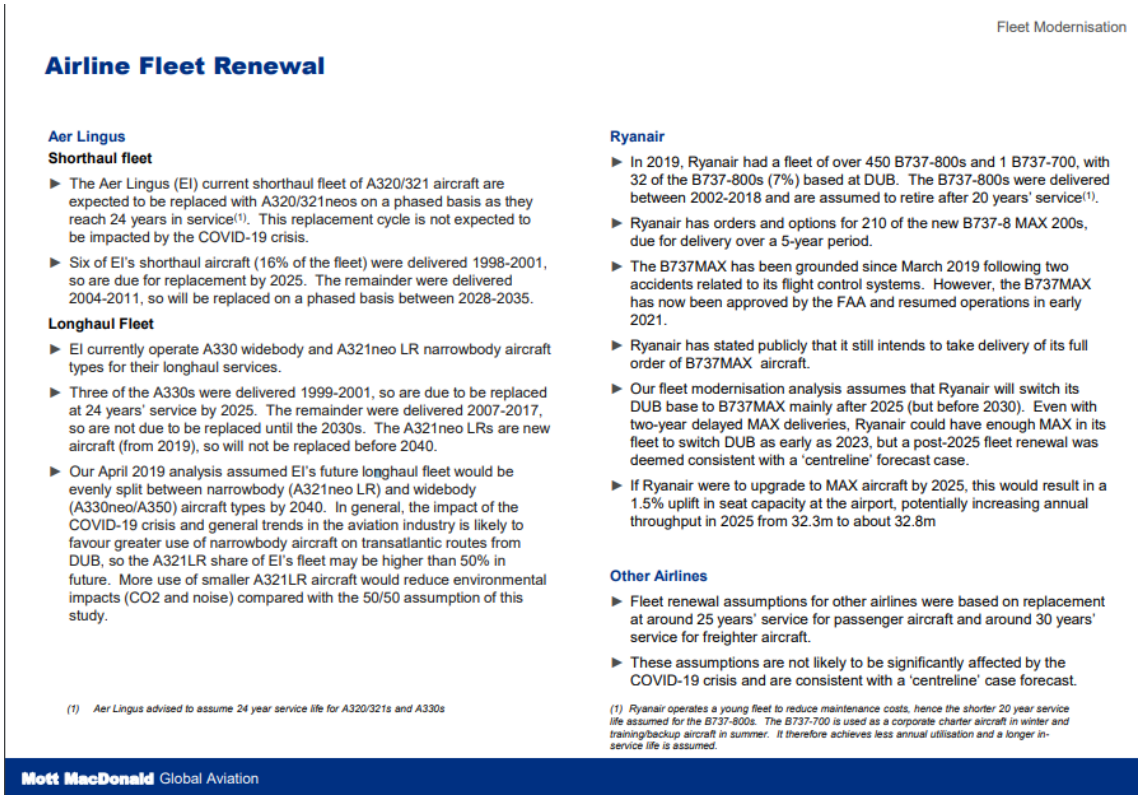
> *"Most of the time the runways will operate in segregated mode, i.e. one runway for all arrivals, the other for all departures. However, there may be occasions during peak hours when runways will need to operate in some degree of mixed mode, i.e. both runways used simultaneously for arrivals and/or departures."*

13B.3.19, 13B.3.20 and 13B.3.21 further expand on Mixed mode use. For these reasons one can only conclude that the revised flight schedules are pure fabrication and not realistic.

The daa have failed to provide any valid assessment of significance with such a scenario and therefore the EIAR is deficient.

3.13 Fleet Renewal

Earlier fleet modernisation is highlighted in the EIAR Supplement as a major key difference compared to the 2021 EIAR. Fleet Modernisation is discussed on slides 11-13 of the Mott MacDonald addendum. What is striking compared to the previous Mott MacDonald report is that there is no new evidence provided backing up the claims of earlier fleet modernisation. This is in contrast to slide 33 of the Mott MacDonald report from the 2021 EIAR which discussed fleet renewal for Aer Lingus, Ryanair and Other Airlines:



Fleet Modernisation

Airline Fleet Renewal

Aer Lingus

Shorthaul fleet

- The Aer Lingus (EI) current shorthaul fleet of A320/321 aircraft are expected to be replaced with A320/321neos on a phased basis as they reach 24 years in service(1). This replacement cycle is not expected to be impacted by the COVID-19 crisis.
- Six of EI's shorthaul aircraft (16% of the fleet) were delivered 1998-2001, so are due for replacement by 2025. The remainder were delivered 2004-2011, so will be replaced on a phased basis between 2028-2035.

Longhaul Fleet

- EI currently operate A330 widebody and A321neo LR narrowbody aircraft types for their longhaul services.
- Three of the A330s were delivered 1999-2001, so are due to be replaced at 24 years' service by 2025. The remainder were delivered 2007-2017, so are not due to be replaced until the 2030s. The A321neo LRs are new aircraft (from 2019), so will not be replaced before 2040.
- Our April 2019 analysis assumed EI's future longhaul fleet would be evenly split between narrowbody (A321neo LR) and widebody (A330neo/A350) aircraft types by 2040. In general, the impact of the COVID-19 crisis and general trends in the aviation industry is likely to favour greater use of narrowbody aircraft on transatlantic routes from DUB, so the A321LR share of EI's fleet may be higher than 50% in future. More use of smaller A321LR aircraft would reduce environmental impacts (CO2 and noise) compared with the 50/50 assumption of this study.

(1) Aer Lingus advised to assume 24 year service life for A320/321s and A330s

Ryanair

- In 2019, Ryanair had a fleet of over 450 B737-800s and 1 B737-700, with 32 of the B737-800s (7%) based at DUB. The B737-800s were delivered between 2002-2018 and are assumed to retire after 20 years' service(1).
- Ryanair has orders and options for 210 of the new B737-8 MAX 200s, due for delivery over a 5-year period.
- The B737MAX has been grounded since March 2019 following two accidents related to its flight control systems. However, the B737MAX has now been approved by the FAA and resumed operations in early 2021.
- Ryanair has stated publicly that it still intends to take delivery of its full order of B737MAX aircraft.
- Our fleet modernisation analysis assumes that Ryanair will switch its DUB base to B737MAX mainly after 2025 (but before 2030). Even with two-year delayed MAX deliveries, Ryanair could have enough MAX in its fleet to switch DUB as early as 2023, but a post-2025 fleet renewal was deemed consistent with a 'centreline' forecast case.
- If Ryanair were to upgrade to MAX aircraft by 2025, this would result in a 1.5% uplift in seat capacity at the airport, potentially increasing annual throughput in 2025 from 32.3m to about 32.8m

Other Airlines

- Fleet renewal assumptions for other airlines were based on replacement at around 25 years' service for passenger aircraft and around 30 years' service for freighter aircraft.
- These assumptions are not likely to be significantly affected by the COVID-19 crisis and are consistent with a 'centreline' case forecast.

(1) Ryanair operates a young fleet to reduce maintenance costs, hence the shorter 20 year service life assumed for the B737-800s. The B737-700 is used as a corporate charter aircraft in winter and training/backup aircraft in summer. It therefore achieves less annual utilisation and a longer in-service life is assumed.

Mott MacDonald Global Aviation

No such analysis or detail is provided in the revised Mott MacDonald addendum. The public are expected to simply believe there'll be an earlier fleet modernisation. But if such evidence existed, then Mott MacDonald would surely have provided it in their addendum. It is imperative that the Board do not blindly accept this statement. If no evidence is provided then it cannot be accepted by the Board.

Attention is drawn to the conclusion of the Phenomena report (https://op.europa.eu/en/publication-detail/-/publication/f4cd7465-a95d-11eb-9585-

01aa75ed71a1). 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 curfew 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 Noise Action Plan (NAP) for Dublin Airport never attempted to provide any meaningful reduction in noise levels, as curfews or penalty regimes were never considered.

The Phenomena 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.

The Board must interrogate the historical data and question 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	2019
>=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	2019
>=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

The Board needs to explain this growth in contour areas even though the percentage of quieter aircraft grew to over 90% in that timeframe. Why will this 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.

4.0 PROJECT IRELAND 2040

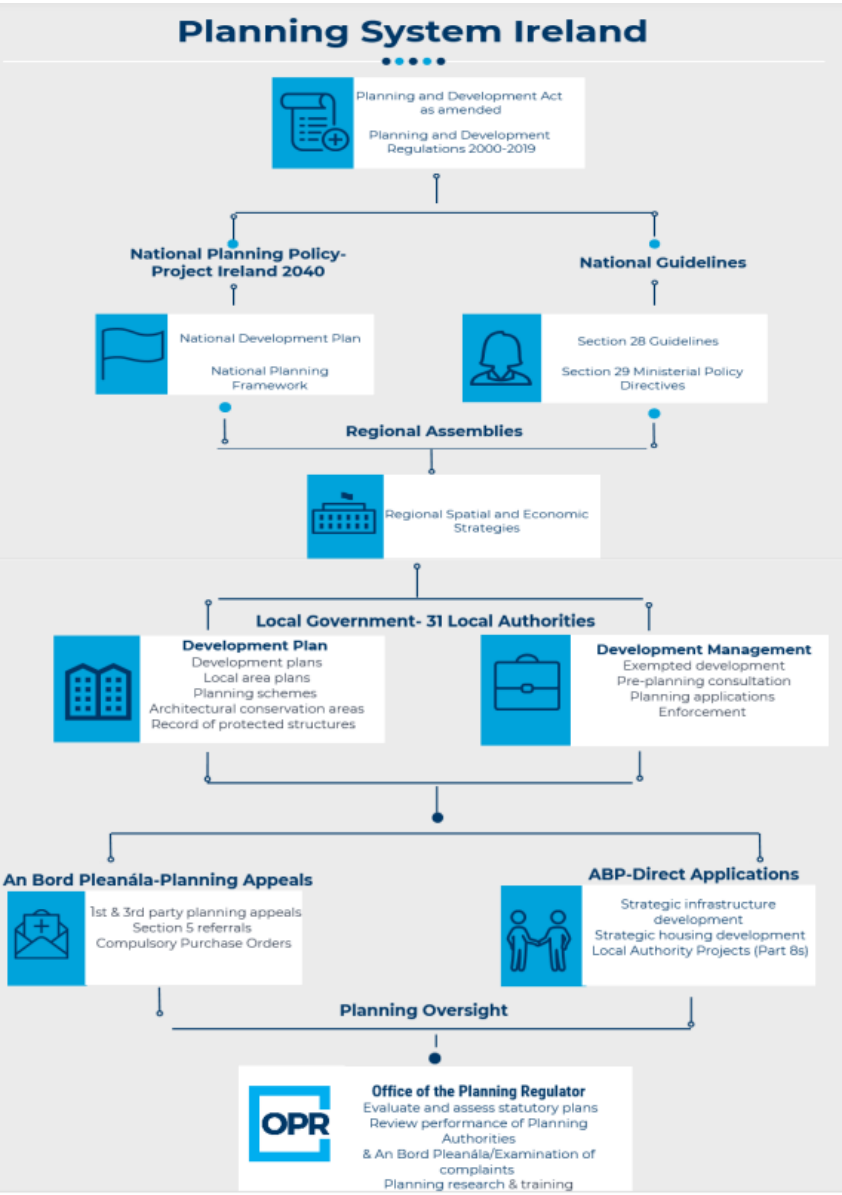
4.0 What has changed

This is a new chapter highlighting how the Relevant Action facilitates growth at Dublin Airport, especially at night, and how this contravenes the objectives of Project Ireland 2040 with regard to Balanced Regional Development. Particular attention is given to a recent publication from Oxford Economics for the Shannon Airport Group highlighting this imbalance.

4.1 Project Ireland 2040

The Department of Housing Planning and Local Government, on behalf of the Irish Government, prepared and published the finalised National Planning Framework under Project Ireland 2040, the overarching policy and planning framework for the social, economic and cultural development of Ireland.

Project Ireland 2040 sits above the Regional Assemblies and Local Government:





From the NPF's website, https://www.npf.ie/project-ireland-2040-national-planning-framework/, the objectives of the National Development Planning Framework are:

- Guide the future development of Ireland, taking into account a projected 1 million increase in our population, the need to create 660,000 additional jobs to achieve full employment and a need for 550,000 more homes by 2040;
- Of the 1 million extra people,
- 25% is planned for Dublin, recognised as our key international and global city of scale and principal economic driver,
- **25% across the other four cities combined (Cork, Limerick, Galway and Waterford), enabling all four to grow their population and jobs by 50-60%, and become cities of greater scale, i.e. growing by twice as much as they did over the previous 25 years to 2016, and**
- **with the remaining 50% of growth to occur in key regional centres, towns, villages and rural areas, to be determined in the forthcoming regional plans – Regional Spatial and Economic Strategies (RSESs).**
- Enable people to live closer to where they work, moving away from the current unsustainable trends of increased commuting;
- Regenerate rural Ireland by promoting environmentally sustainable growth patterns;
- **Plan for and implement a better distribution of regional growth, in terms of jobs and prosperity**;
- Transform settlements of all sizes through imaginative urban regeneration and bring life / jobs back into cities, towns and villages;

- Co-ordinate delivery of infrastructure and services in tandem with growth, through joined-up NPF/National Investment Plan and consistent sectoral plans, which will help to manage this growth and tackle congestion and quality of life issues in Dublin and elsewhere

A key strategy is targeting a level of growth in the Northern, Western and Southern regions combined to at least match that projected in the Eastern and Midland region:



Section 1.2 of the plan sets out a new strategy for managing growth:

> *"From an administrative and planning point of view, Ireland is divided in to three regions: the Northern and Western, Southern, and Eastern and Midland Regional Assembly areas.* ***We need to manage more balanced growth between these three regions*** *because at the moment Dublin, and to a lesser extent the wider Eastern and Midland area, has witnessed an overconcentration of population, homes and jobs.* ***We cannot let this continue unchecked and so our aim is to see a roughly 50:50 distribution of growth*** *between the Eastern and Midland region, and the Southern and Northern and Western regions, with 75% of the growth to be outside of Dublin and its suburbs."*

And supporting ambitious growth targets to enable the four cities of Cork, Limerick, Galway and Waterford to each grow by at least 50% to 2040 and to enhance their significant potential to become cities of scale.

National Policy Objectives 1a-1c clearly outline how growth should be dispersed throughout the country:

National Policy Objective 1a

The projected level of population and employment growth in the Eastern and Midland Regional Assembly area will be at least matched by that of the Northern and Western and Southern Regional Assembly areas combined.

National Policy Objective 1b

- Eastern and Midland Region: 490,000 - 540,000 additional people i.e. a population of around 2.85 million;
- Northern and Western Region: 160,000 - 180,000 additional people i.e. a population of just over 1 million;
- Southern Region: 340,000 - 380,000 additional people i.e. a population of almost 2 million.

National Policy Objective 1c

- Eastern and Midland Region: around 320,000 additional people in employment i.e. 1.34 million in total;
- Northern and Western Region: around 115,000 additional people in employment i.e. 450,000 (0.45m) in total;
- Southern Region: around 225,000 additional people in employment i.e. 880,000 (0.875m) in total.

Table 2.1 summarises the NPF and where growth should occur:

Table 2.1 | The NPF at a Glance: Targeted Pattern of Growth, 2040

National Policy Objective	Eastern and Midland	Southern	Northern and Western
1. Growing Our Regions	+ 490,000 - 540,000 people (2.85m total) +320,000 in employment (1.34m total)	+ 340,000 - 380,000 people (2m total) +225,000 in employment (880,000 total)	+160,000 - 180,000 people (1m total) +115,000 in employment (450,000 total)
2. Building Stronger Regions: Accessible Centres of Scale[20]	Dublin City and Suburbs: +235,000 - 290,000 people (at least 1.41 million total) Regional Spatial and Economic Strategy to set out a strategic development framework for the Region, leading with the key role of Athlone in the Midlands and the Drogheda-Dundalk-Newry cross-border network	Cork City and Suburbs: +105,000 - 125,000 people (at least 315,000 total) Limerick City and Suburbs: +50,000 - 55,000 people (at least 145,000 total) Waterford City and Suburbs: +30,000 - 35,000 people (at least 85,000 total) Regional Spatial and Economic Strategy to set out a strategic development framework for the Region	Galway City and Suburbs: +40,000 - 45,000 people (at least 120,000 total) RSES to set out a strategic development framework for the Region, leading with the key role of Sligo in the North-West, Athlone in the Midlands and the Letterkenny-Derry cross-border network
3. Compact, Smart, Sustainable Growth	50% of new city housing within existing Dublin City and suburbs footprint 30% all new housing elsewhere, within existing urban footprints	50% new city housing on within existing Cork, Limerick and Waterford Cities and Suburbs footprints 30% all new housing elsewhere, within existing urban footprints	50% of new city housing within existing Galway City and suburbs footprint 30% all new housing elsewhere, within existing urban footprints

4.2 Report from Shannon Airport Group

On the 10th of November 2023 the Shannon Airport Group published a report from Oxford Economics on the The Economic Impact of the Shannon Airport Group:

https://www.snnairportgroup.ie/news-media/latest-news/2023/oxford-economics-impact-report-snngroup

It is very important to put this report into context. Oxford Economics were employed by the Department of Transport, Tourism and Sport to conduct a '*Review of Future Capacity Needs at Ireland's State Airports*'. The final report was published in August 2018:

https://assets.gov.ie/22659/d2cbb36779534741adde4be4f0943a7d.pdf

Therefore, they are a very reputable body with experience of the Irish Aviation industry and having a record working for the Department of Transport, Tourism and Sport. In that context they are perfectly positioned to conduct a non-biased report into areas of the Irish Aviation industry.

The press release from the Shannon Airport Group is very relevant to Ireland's National Aviation Policy and how it adheres to Project Ireland 2040:

> ***"****Shannon Airport Group makes a major economic contribution to the Mid-West region and Ireland, and has the potential to do even more in the future. However, one of the areas we note in our report is that* ***Ireland's aviation policy has to date failed to create a level playing field for Ireland's regional airports to flourish.*** *Given that airports can drive regional growth, and that* ***Project Ireland 2040 aims to rebalance growth across Ireland****, there is a strong argument for providing state aid to Shannon Airport.*
> *"There is strong evidence that airports can have a positive impact on local and regional economies and Governments are recognising the benefits of having a balanced aviation sector****. If a country has an excessive reliance on a single airport, it can concentrate economic growth and any disruptions could cause a significant impact on the tourism sector, as well as the economy as a whole."***

The press release goes on further to make a series of recommendations, one of which is:

- ***Government should update the Irish Aviation Policy published in 2015 to help it achieve the long-term growth targets set out in Project Ireland 2040****.*

The press release also quotes the Minister of State at the Department of Transport, Jack Chambers TD:

> *"**Shannon has a key role to play in rebalancing Ireland's aviation landscape, alleviating the congestion at Dublin Airport and delivering balanced regional development for our country**."*

In the Executive Summary, Oxford Economics discusses the policy environment and challenges for Shannon Airport:

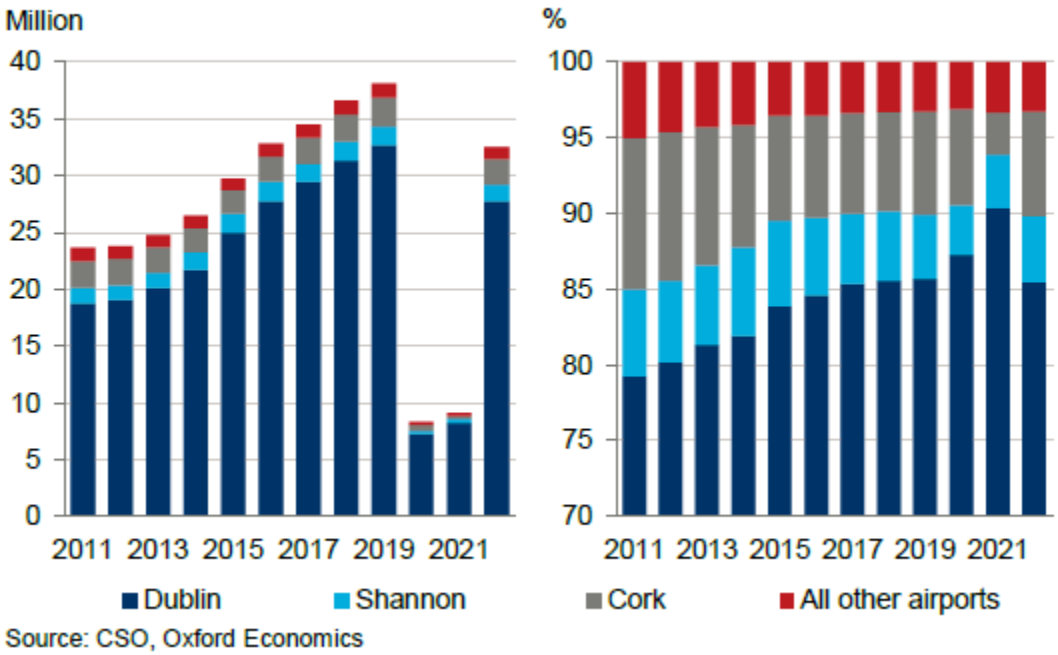
> *"**While the outlook for growth in the aviation sector is positive, Ireland's aviation sector is one of the most concentrated in Europe.** Dublin Airport forms a higher share of aviation activity than across comparator European nations and has captured almost all of the recent growth in passengers across Ireland. It may be that this is partly due to the aviation and economic policy decisions made by the Irish Government, such as excluding regional airports serving more than one million passengers from financial support provided under the Regional Airports Programme and decisions by the Commission for Aviation Regulation to fund continuous capacity expansion at Dublin Airport without consideration of the impact this has on national infrastructure and regional balance."*
>
> *"**Rebalancing passengers to regional airports, such as Shannon, will bring a range of benefits to the Irish economy.** A strong regional airport assists in building a more vibrant business environment, helping to unlock growth. If a country has an excessive reliance on a single airport, any disruptions, such as labour shortages, natural disasters, or technical failures, could cause a significant impact on the tourism sector, as well as the economy as a whole."*
>
> *"**Supporting regional airports will also enable the Government's wider regional growth objectives, as set out in Project Ireland 2040.** However, our baseline forecast indicates that the desired spatial rebalancing of economic growth is unlikely to materialise without substantial intervention, with population and employment expected to continue to be concentrated across the Eastern & Midland region (including Dublin)."*
>
> *"**The National Aviation Policy predates the Project Ireland 2040 development strategy, and a review of aviation policy is needed to accommodate the Government's ambitions for rebalancing regional growth across Ireland. There would also be a series of environmental benefits that would support the Government's efforts to tackle climate change, such as reducing noise in***

residential areas or pollution from large-scale expansion projects in Dublin Airport."

The above statement from Oxford Economics clearly states that a review of aviation policy is needed as it's failing the core aims of Project Ireland 2040 to support balanced regional development and growth across Ireland. It also the environmental benefits of reducing noise and pollution.

Section 3.4 of the Oxford Economics report is focused on passenger numbers. Since 2011 Ireland saw an 8.9m increase in passenger travelling through its airports, which is a 60% increase. But the report outlines that Dublin Airport accounted for 85% of passengers in 2022 up from 79% in 2011. Dublin Airport accounted for all of the net increase between 2011 – 2022. Shannon's market share declined from 5.8% in 2011, to 4.4% in 2022.

Fig. 19. Passengers by airport, Ireland, 2011 to 2022



Source: CSO, Oxford Economics

In section 4.2 of the report, it highlights how Ireland's aviation sector is one of the most concentrated in Europe. Only the Netherlands has a larger share of passenger concentrated at a single airport.

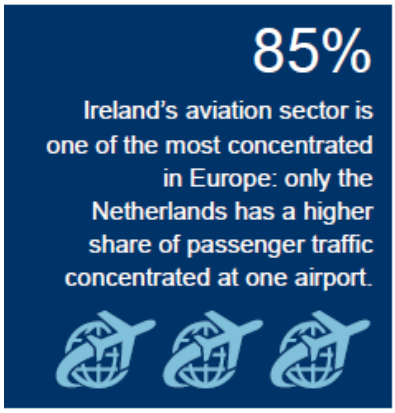
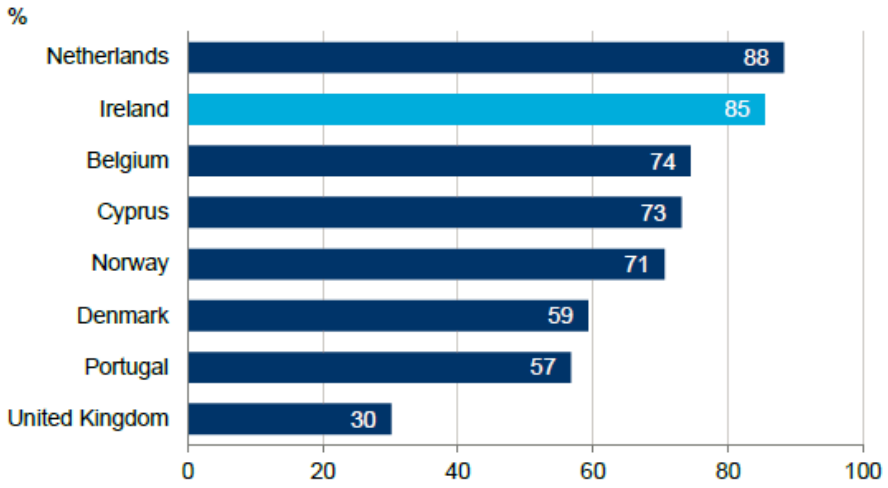


Fig. 22. Market share of the largest airport, selected countries, 2019



Source: CSO, International Airports Review, Statistia, Oxford Economics

The report discusses the Dutch Government's plans to cap the number of flights at Schiphol to address emissions and noise issues. This demonstrates the willingness to tackle market dominance and one that Ireland could adopt by adhering to Project Ireland 2040 to promote balanced regional development.

The EIAR submitted fails to examine any alternative to expansion at Dublin Airport with respect to using the other airports in Ireland, which would have a significant positive impact on the environment surrounding Dublin Airport. This blinkered approach is not environmentally acceptable and is contrary to the Environmental Assessment Legislation.

5.0 COST EFFECTIVENESS ANALYSIS

5.0 What has changed

This is an update to chapter 9 in the appeal document focusing on the Cost Effectiveness Analysis Update from Ricondo. As a result of the noise chapter being revised, the Ricondo document was updated, and this chapter addresses this update. Ricondo never addressed the incorrect definition of the 'Forecast Without New Measures' scenario and therefore the same arguments are made once again to highlight this. As a comparison, a new reference is made to a 'To70' report titled 'Balanced approach study Schiphol Airport' from March 2023, on how to conduct a proper Balanced Approach assessment. Refences are made to the updated noise statistics and based on these revised noise statistics how the daa's Relevant Action fails the NAO when permitted and zoned developments are included. As with the appeal, reference is made to other negative costs attributed to aviation and how these are sizeable and not factored in by the daa or ANCA.

5.1 Forecast Without New Measures

In section 3 of the revised Ricondo Cost Effectiveness Report it states that:

> *"The definition of the Forecast Without New Measure scenario and the existing and planned measures assumed (reference Table 3-1 of the 2021 CEA Report) did not change as a result of the updated assessment."*

Therefore, Ricondo are continuing to use a 'Forecast Without New Measures' scenario that conflicts with the EU598/2014 legislation. In the main appeal document from St Margarets The Ward Residents Group to An Bord Pleanála, section 9.2 and 9.3 go into detail of how ANCA and the daa have misinterpreted the definition of 'Forecast Without New Measures'. In summary, the 'Forecast Without New Measures' as defined in Annex I (2) includes developments '*already approved and in the pipeline*'.

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.

Annex I (2.1) clearly includes all those measures already planned. This is effectively the Baseline Scenario. However, ANCA and the daa decided to modify this definition from Annex I and stripping off all existing noise mitigation measures and operating restrictions.

Ricondo also made reference in their 2021 report to the 'Do-Nothing' scenario and equating it with the 'Forecast Without New Measures' scenario. Again, this is a flawed approach to the assessment as the 'Do-Nothing' scenario is clearly defined in the EPA's EIAR guidelines, https://www.epa.ie/publications/monitoring--assessment/assessment/EPA_EIAR_Guidelines.pdf.

It should consider the effects of projects which already have consent but are not yet implemented and should also consider other projects that are planned and not yet permitted.

The 'Do-Nothing' is clearly the consented scenario with Conditions 3(d) and 5 in place. The 'Do-Nothing' should then be compared to alternatives which are the 'Do-Something' scenarios.

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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.

The Appeal document also made reference to the ICAO 'Guidance on the Balanced Approach to Aircraft Noise Management' document which defines the baseline noise situation as:

> "*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.*"

It also states that when establishing the baseline, measures such as noise abatement operational procedures and existing operating restrictions should be taken into account. Conditions 3(d) and 5 came into effect when the North Runway became operational and therefore need to be used for the baseline scenario to compare against.

The definition of the 'Forecast Without New Measures' scenario has not changed in the EIAR Supplement. Ricondo refers readers to their 2021 CEA report. In section 3 it describes the forecast Runway use for the 'Forecast Without New Measures' scenario. It states that for nighttime both Runways can be used for arrivals and departures. This is not in line with Option 7b and Condition 3(d) of the North Runway's planning permission. The 'Forecast Without New Measures' scenario outlined by ANCA is a flawed scenario and both the daa's and ANCA's cost-effectiveness analysis need to be recomputed.

Ricondo have not changed their definition of the 'Forecast Without New Measures' scenario in this revised EIAR Supplement and therefore their whole assessment is flawed and needs to be recalculated.

As a comparison on how to conduct a proper Balanced Approach assessment, 'To70' published a report titled 'Balanced approach study Schiphol Airport' from March 2023:

https://www.internetconsultatie.nl/balanced_approach_schiphol/document/11061

To70 were commissioned to perform a study following the EU598/2014 process to assess which combination of measures may be taken to meet the NAO in November 2024. The Balanced approach procedure defined in EU598/2014 should provide an answer to the question whether a capacity reduction to 440k movements per annum is the most cost-efficient measure to meet the NAO for Schiphol..

Section 1.1 lists the NAO criteria for Schiphol and the reductions required to be met in November 2024.

- 20% reduction of the number of highly annoyed people within the 48 dB(A) Lden contour
- 20% reduction of the number of houses within the 58 dB(A) Lden contour
- 15% reduction of the number of severely sleep disturbed people within the 40 dB(A) Lnight contour
- 15% reduction of the number of houses within the 48 dB(A) Lnight contour

These reductions are relative to a baseline scenario. The baseline scenario is the situation with 500k movements cap and 32k nighttime movements cap per annum. These are the main operating restrictions at Schiphol and are discussed in section 2.6.4. The baseline scenario also includes all planned measures up to November 2024. The baseline scenario does not include any additional measures. This baseline scenario is the scenario to which all additional measures are compared against.

This is how ANCA and the daa should have approached the regulatory assessment for Dublin Airport. They have the defined the NAO for Dublin Airport and the Baseline should have been defined as the Permitted or Consented scenario up to 2025. Then they should have assessed all other measures against this Baseline to achieve the NAO in a cost-efficient way.

Unfortunately, ANCA and the daa approached the process with the sole intent of undermining the Permitted scenario which includes the current operating restrictions.

The To70 report lists the noise data for the Baseline scenario and the targets required to meet the NAO. Taking the same approach at Dublin Airport, the question is what is required for the Permitted scenario to meet the NAO. Based on the data supplied by the daa, the Permitted scenario meets the NAO in 2025.

Below are the figures comparing the 2025 Permitted and Proposed scenarios versus 2018 and 2019 using existing population figures. Both Permitted and Proposed scenarios meet the NAO targets for 2019 but the Proposed scenario fails if 2018 is used as the reference year.

Existing population	>65dB Lden	>55dB Lnight	Number HA	Number HSD
2018	257	753	110238	42260
2019	285	1533	115738	47045
2025 Permitted	191	315	55041	22281
2025 Proposed	254	1463	53854	23884

When consented developments are included it's very evident that 2025 Proposed fails the >55dB Lnight objective by a large margin. However, 2025 Permitted is well below the criteria.

Including consented developments	>65dB Lden	>55dB Lnight	Number HA	Number HSD
2018	257	950	121942	48950
2019	285	4158		
2025 Permitted	191	315	64967	27474
2025 Proposed	254	6074	62872	29589

Therefore, the Proposed scenario as submitted from the daa is not an acceptable scenario. Other alternatives need to be examined. As it stands the Permitted scenario does meet the NAO and therefore is the prime candidate unless an alternative scenario is available that meets the NAO.

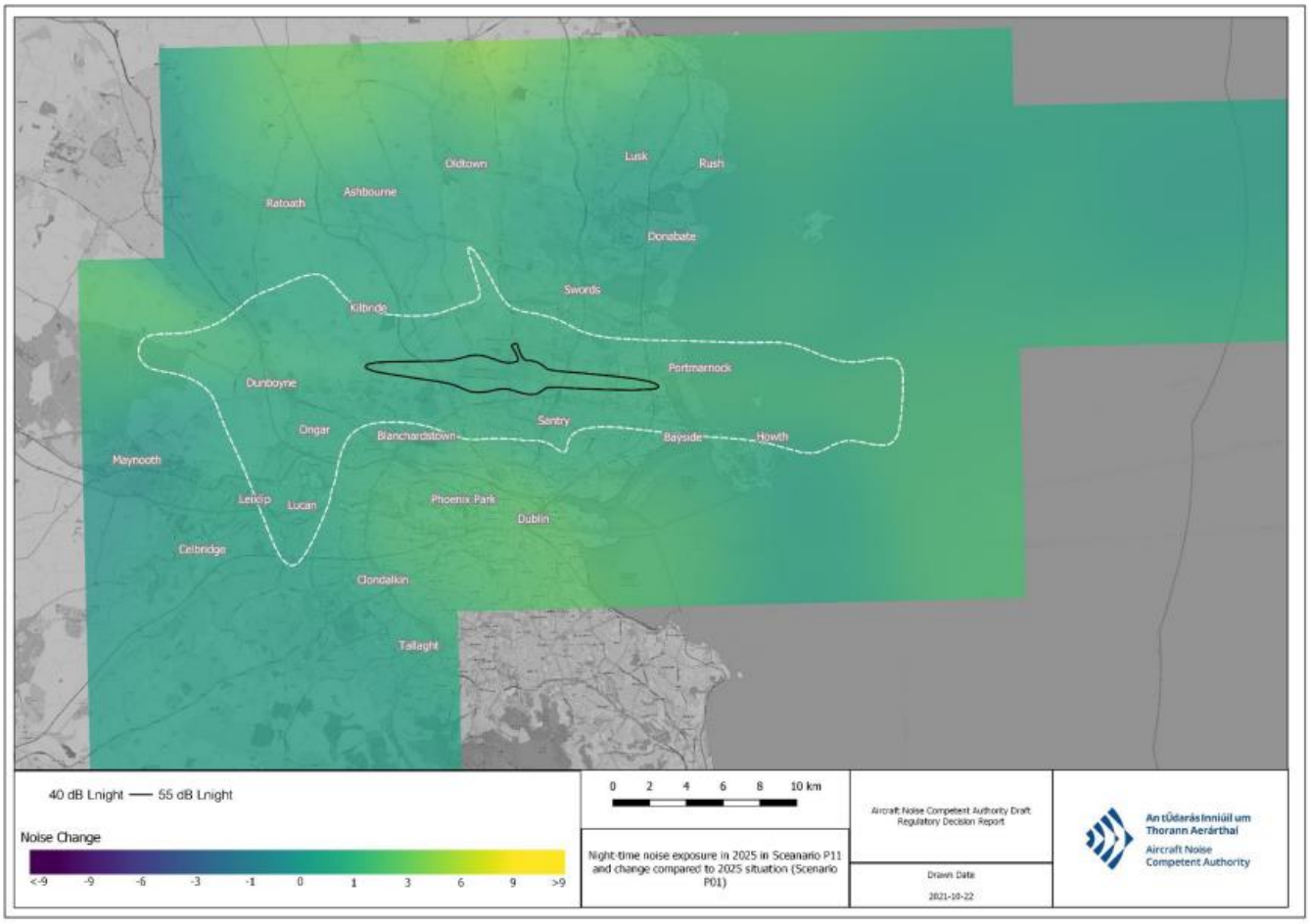
5.2 Comparison of scenario P02 and scenario P11

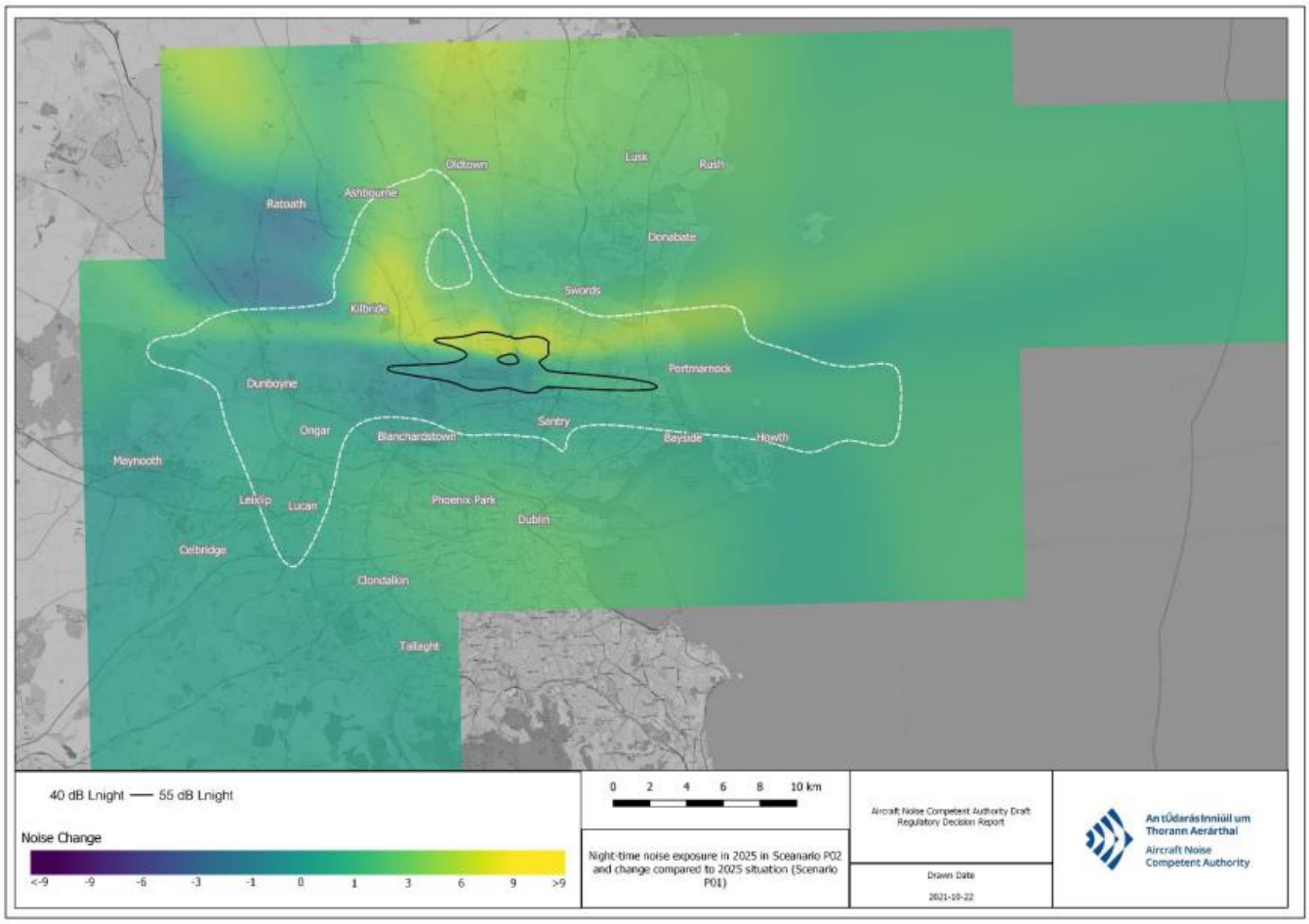
In light of the revised EIAR Supplement we need to revisit the Regulatory decision by ANCA. In their Regulatory decision ANCA looked at a comparison of scenario P02 with P11. Scenario P02 is equivalent to the daa's Relevant Action proposal. Scenario P11 is equivalent to replacing Condition 5 with a NQS but leaving Condition 3(d) in place. This equates to having

unlimited night-time flights on the South Runway only but no night-time flights on the North Runway.

Comparing the difference maps between scenarios 02 and 11 with scenario 01 (Permitted) one can see that scenario P11 caused no significant changes in noise exposure and a scenario that that ANCA should favour.

Scenario P02 introduced whole new populations to night-time noise for the first time, primarily in Malahide, Swords, St Margarets, The Ward, Coolquay, Ashbourne, Ratoath, Oldtown and Ballyboughal.





Draft Regulatory Decision – Appendix E (https://www.fingal.ie/sites/default/files/2021-11/appendix-e.pdf)

Effectively no new populations would be exposed to new levels of noise with scenario P11. This is an outcome that ANCA should be aspiring to achieve.

What is noticeable from the Ricondo CEA Analysis Update document is that Scenarios P11, P12 and P13 are missing from their analysis. Revised table 4-2 excludes P11, P12 and P13. This is baffling as the daa should know that ANCA assessed these scenarios and therefore it's logical that the Board would do likewise. Again, this will have the effect of slowing down the appeal process as the Board now have to go and request this data in order to carry out a regulatory assessment in line with that of ANCA's.

However, it is essential that the Board carry out this assessment.

REVISED TABLE 4-2: EFFECTIVENESS OF FEASIBLE MEASURES TO ACHIEVE NOISE ABATEMENT OBJECTIVE – COMPARISON TO THE 2018 SITUATION

SCENARIO	POPULATION RESULTS		COMPARISON TO 2018 SITUATION		STATUS
	NO. OF PEOPLE HIGHLY ANNOYED	NO. OF PEOPLE HIGHLY SLEEP DISTURBED	NO. OF PEOPLE HIGHLY ANNOYED	NO. OF PEOPLE HIGHLY SLEEP DISTURBED	
Forecast without New Measures	58,929	25,303	- 51,267	-16,931	Proceed
Scenario 2	53,810	23,855	-56,386	-18,378	Proceed
Scenario 3	49,022	21,107	-61,173	-21,127	Proceed
Scenario 4	61,672	25,815	-48,524	-16,419	Proceed
Scenario 5	58,419	26,285	-51,776	-15,949	Proceed
Scenario 7	58,694	25,672	-51,502	-16,562	Proceed
Scenario 8	62,326	27,813	-47,869	-14,421	Proceed
Scenario 9	50,411	21,360	-59,785	-20,874	Proceed
Scenario 10	52,765	23,518	-57,431	-18,716	Proceed

NOTES:

Decrease Increase

Population analysis includes a 5 dB reduction factor for eligible dwelling units under the existing and planned residential sound insulation schemes. The 5 dB reduction does not represent a reduction in exterior levels and does not change the location of the dwelling unit within exterior noise exposure levels.
Negative value indicates a decrease in population exposure compared to the 2018 situation.
SOURCE: Bickerdike Allen Partners LLP, *A11267_23_CA029_3.0 Summary of Results Including Mitigation*, September 10, 2023 (population values).

It is also worth noting that the Ricondo report references a document from BAP, '***A11267_23_CA029_3.0 Summary of Results including Mitigation, September 10, 2023***'. This can be seen at the bottom of revised table 4-2 above. This document does not form part of the dataset published by the Board. How are the public expected to interrogate this report without this referenced document available to them?

It is also worrying that Ricondo's figures in revised table 4-2 take into account a reduction of 5 dB under existing and planned residential sound insulation schemes. But it's very apparent from the revised flight paths shown in 'A11267_23_DR074_1.0 FigureB-3 Modelled Routes – North Runway.pdf' that the existing insulation schemes which were based on straight out routes, as per compliance report for planning F04A/1755, that the new contours don't align up and therefore this 5 dB reduction is not accurate.

Revised table 4-3 highlights that no scenario was eliminated based on the number of people Highly Annoyed and Highly Sleep Disturbed.

Revised table 4-4 lists the number of people exposed to noise level changes equivalent to significant adverse effects for each scenario compared to 2018.

REVISED TABLE 4-4: EFFECTIVENESS OF FEASIBLE MEASURES TO MINIMISE SIGNIFICANT ADVERSE EFFECTS CAUSED BY CHANGES IN L_{DEN} AND L_{NIGHT} LEVELS – COMPARISON TO 2018 SITUATION

SCENARIO	NUMBER OF PEOPLE SIGNIFICANTLY ADVERSELY EFFECTED – L_{DEN}	NUMBER OF PEOPLE SIGNIFICANTLY ADVERSE EFFECTED – L_{NIGHT}	STATUS
Forecast without New Measures	25,893	25,613	Eliminate
Scenario 2	16,119	1,860	Proceed
Scenario 3	20,262	2,738	Eliminate
Scenario 4	33,579	29,954	Eliminate
Scenario 5	22,767	21,062	Eliminate
Scenario 7	11,150	14,253	Eliminate
Scenario 8	31,545	28,543	Eliminate
Scenario 9	30,547	19,254	Eliminate
Scenario 10	23,482	11,642	Eliminate

NOTES:

Decrease | Increase

Population analysis includes a 5 dB reduction factor for eligible dwelling units under the existing and planned residential sound insulation schemes. The 5 dB reduction does not represent a reduction in exterior levels and does not change the location of the dwelling unit within exterior noise exposure levels.
Negative value indicates a decrease in population exposure compared to 2018 conditions.
n/a – not applicable because it is the baseline scenario.
L_{night} – average sound pressure level for an 8-hour period (recommended period of sleep for adults) between 23:00 and 07:00
L_{den} – average sound pressure for 24 hours with noise events weighted at 10 dB for night-time (23:00 to 07:00) and 5 dB for evening (19:00 to 23:00)
SOURCE: Bickerdike Allen Partners LLP, *A11267_23_CA029_3.0 Summary of Results Including Mitigation*, September 10, 2023 (population values).

Table 7 of BAP document '*A11267_23_RP065_1.0 CEA Noise Information Report.pdf*' lists the number of people significantly affected under each scenario compared to 2018 and allowing for existing sound insulation schemes:

Table 7: Significantly Affected Results, Allowance for Existing SIS Only

Scenario Description	Population Significantly Affected vs 2018, L_{den}	Population Significantly Affected vs 2018, L_{night}
2018	n/a	n/a
2025 Scenario 01	1987	0
2025 Scenario 02	16119	1860
2025 Scenario 03	20262	2738
2025 Scenario 04	33579	29954
2025 Scenario 05	22767	21062
2025 Scenario 06	25893	25613
2025 Scenario 07	11150	14253
2025 Scenario 08	31545	28543
2025 Scenario 09	30547	19254
2025 Scenario 10	23482	11642
2025 Scenario 11	2937	173
2025 Scenario 12	15441	1649
2025 Scenario 13	18919	2239

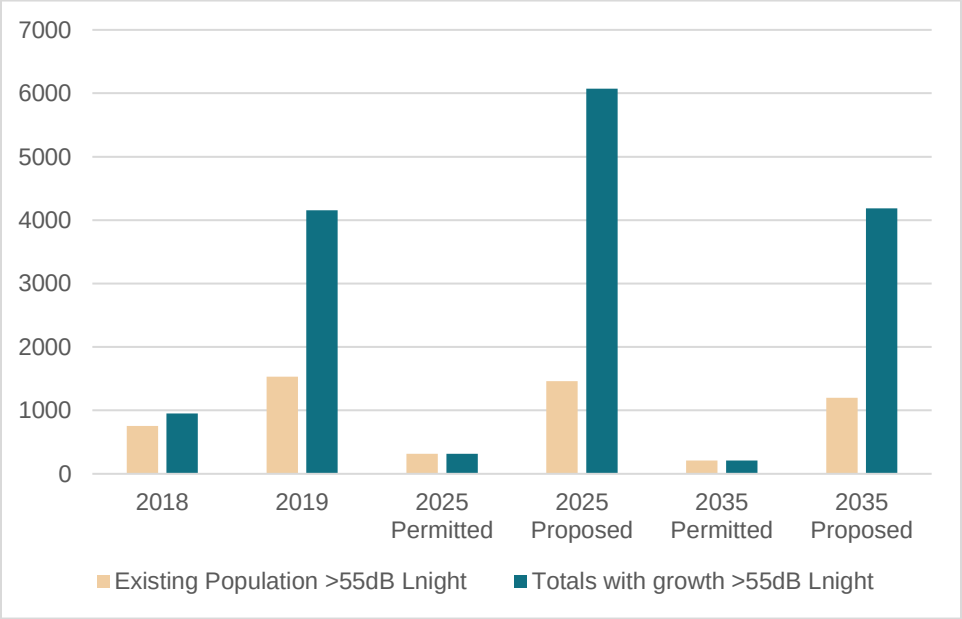
What is extremely relevant in this table is that it includes scenarios 11, 12 and 13. Two scenarios are clearly a fraction of the other scenarios, namely scenario 01 and scenario 11. Scenario 01 is the permitted scenario or 'do-nothing' scenario with Conditions 3(d) and 5 in place. But scenario 11 highlights that it can have a very small impact on the population at night compared to 2018 with only 173 additional cases. Scenario 11 retains Condition 3(d) and disallows flights on the North Runway at night but replaces Condition 5 with a Noise Quota Scheme (NQS). Therefore, it's of paramount importance that Scenario 11 is thoroughly analysed and not ruled out at an early stage. Ricondo have not even considered Scenario 11 and therefore their analysis and conclusions are flawed. The Scenario with the best results in terms of significance has been deliberately left out of the analysis with no explanation. This in itself is a reason to refuse this Relevant Action application.

5.3 Comparison of population to exposed to > 55dB Lnight

Below is a comparison of the population exposed to > 55dB Lnight for the existing population, permitted developments and zoned developments for a range of previous years and forecast years based on data provided in the new EIAR. Also provided is a table with a similar comparison of data from the 2021 EIAR.

New Signifcant Information	2018	2019	2025 Permitted	2025 Proposed	2035 Permitted	2035 Proposed
Existing Population >55dB Lnight	753	1533	315	1463	212	1197
Permitted developments >55dB Lnight	197	825	0	1011	0	591
Zoned developments >55dB Lnight	0	1800	0	3600	0	2400
Totals with growth >55dB Lnight	950	4158	315	6074	212	4188

The existing population and total population data have been graphed in the following chart:



What is noticeable is that the 2025 Proposed Scenario will fail the NAO when compared to 2019 when the total value of the existing population, permitted developments and zoned developments are summed together. 2025 Proposed exceeds 2019 by 1,916.

Even if all zoned developments were refused planning, the number of existing population and permitted developments would still exceed the 2019 equivalent.

2035 Proposed would also fail the NAO when all total developments are taken into account.

For comparison purposes the same data has been extracted from the previous 2021 EIAR and tabulated:

Previous 2021 EIAR	2018	2019	2025 Permitted	2025 Proposed	2035 Permitted	2035 Proposed
Existing Population >55dB Lnight	753	1533	280	1059	203	454
Permitted developments >55dB Lnight	197	825	0	394	0	0
Zoned developments >55dB Lnight	0	1800	0	600	0	0
Totals with growth >55dB Lnight	950	4158	280	2053	203	454

What is apparent comparing the two tables is that there are a larger number of permitted and zoned developments now than compared to what was known in 2021. Based on these new figures and the Noise Abatement Objective set by ANCA for the number of people exposed to > 55dB Lnight compared to 2019, ANCA would have no option but to eliminate 2025 Proposed and 2035 Proposed and look at alternative scenarios to meet the NAO. The > 55 dB Lnight criteria highlights those most impacted by very serious nighttime noise that can have serious consequences on health. These new figures produced in the new EIAR shows that the daa's proposed scenario cannot be accepted.

5.4 Health Costs

In light of the revised EIAR Supplement we need to revisit the issue of revised 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.

From section 8.4 of this report, various DALY values were used to account for the costs associated with the number of people Highly Annoyed and Highly Sleep Disturbed:

Scenario	Total Yearly Cost HA and HSD (78500)	Total Yearly Cost HA and HSD (70850)	Total Yearly Cost HA and HSD (110987)
2025 Proposed	€ 215,793,360	€ 194,763,816	€ 305,098,824
2025 Permitted	€ 208,848,465	€ 188,495,717	€ 295,279,804
2018	€ 405,292,360	€ 365,795,716	€ 573,021,442
2019	€ 431,585,935	€ 397,320,424	€ 622,405,107

5.5 Carbon Emission Costs

The revised Ricondo 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 2021 (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 32.9m 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 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.

5.6 Environmental Damage

The PBL Netherlands Environment Assessment Agency produced a policy briefing document in June 2018 titled - 'MONETARY ENVIRONMENTAL DAMAGE IN THE NETHERLANDS' (https://www.pbl.nl/publicaties/monetaire-milieuschade-in-nederland).
In this document it states that aviation alone accounted for €3.5bn in environmental damages when taking into account damage caused by Dutch residents and companies abroad.

Table 4.8 Environmental damage to aviation in the Netherlands and by Dutch residents in 2015 (in million euros)

	In the Netherlands	By Dutch residents
Climate (greenhouse gases)		
carbon dioxide	43	744
methane	0	0
Distikstofoxide	0	6
Air pollution NEC substances		
Nitrogen Oxides	118	2.814
Sulfur oxides	6	65
Ammonia	0	0
NMVOS	1	3
particulate matter	2	10
Air pollution other substances		
Carbon monoxide	0	1
Total	170	3.644
Climate (extra two degrees)	28	486
Total	198	4.129

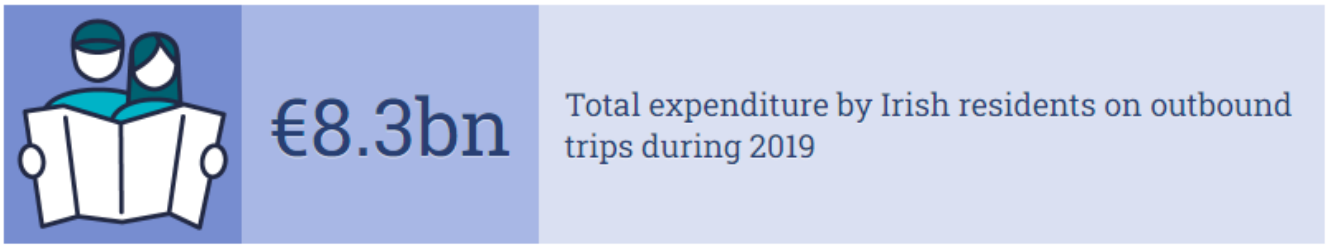
Source: see table 4.7

In 2015 there were 540381 aircraft movements at Dutch airports. For '2025 Proposed' the daa are forecasting 240k aircraft movements, equating to 44.4% of the Dutch 2015 numbers. Applying this percentage to the €3.5 billion aviation environmental damage equates to €1.55 billion. Thus €1.55 billion is a good proxy of the environmental damage expected due to Aviation from Irish residents in 2025 (based on 2015 costs).

These environmental costs from Irish residents travelling abroad are not factored into ANCA's CEA.

5.7 Inbound Tourism Versus Outbound Tourism

In the CSO statistics on tourism (https://www.cso.ie/en/releasesandpublications/ep/p-syi/statisticalyearbookofireland2020/tt/tourism/) it states that €8.3bn was spent on overseas trips in 2019 by Irish residents.



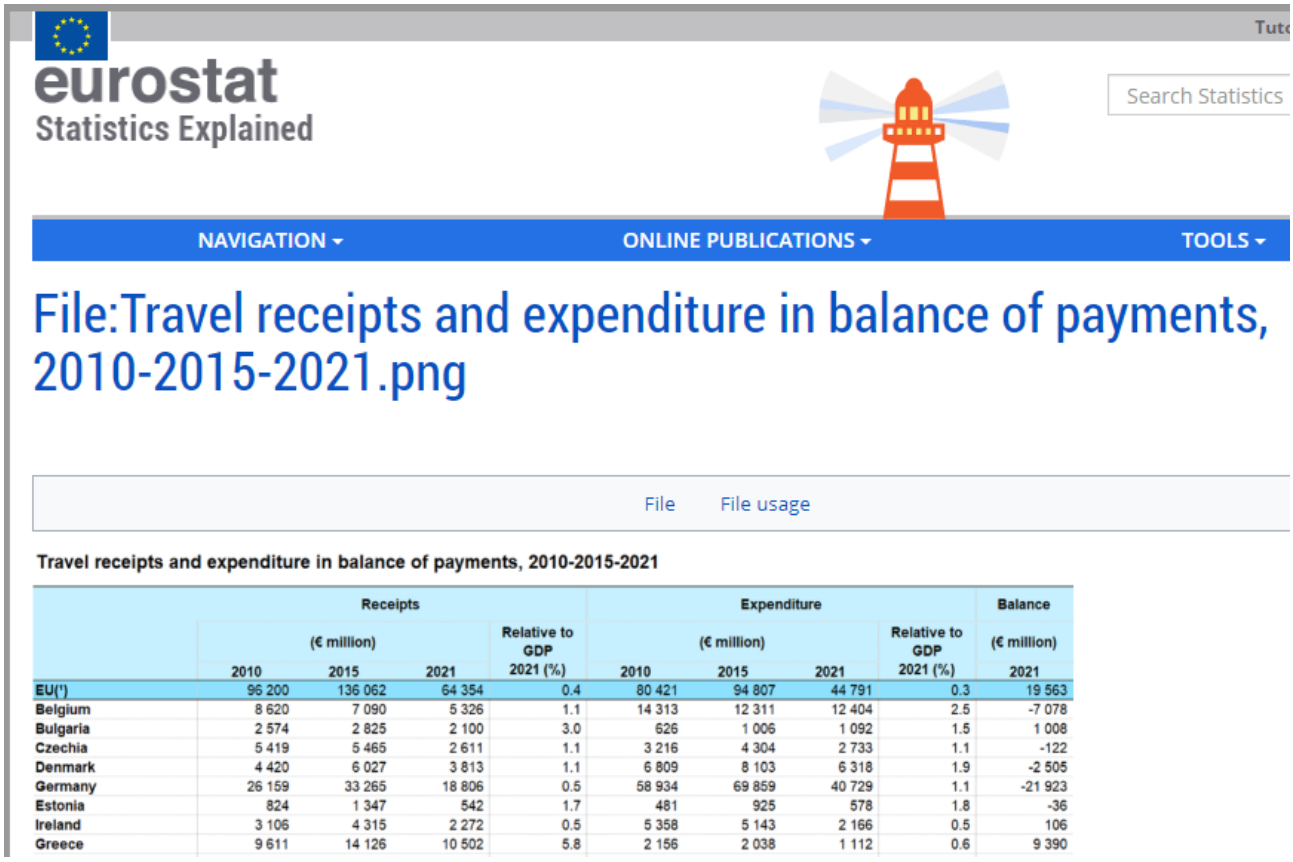
In contrast, €5.1bn was spent by overseas residents in Ireland in 2019:

"*Excluding fares, expenditure by overseas travellers decreased by 0.9% in 2019, from €5,149 million in 2018 to €5,101 million. Of this €5,101 million, 60.3% was spent by overseas travellers for holiday/leisure/recreation purposes, 17.8% by those travelling to visit friends and relatives, 14.1% by business travellers and the remaining 7.8% by those travelling for 'Other' reasons*".

This equates to a **net loss in tourism in 2019 of €3.2bn**. From 2014 to 2019 there have been tourism deficits. One can assume that this pattern of losses will continue into the future. These losses facilitated by aviation have not been factored into the daa's or ANCA's Cost Effective Analysis. The analysis provided only factors in the positive effects of inbound tourism and ignores the negative effects of outbound tourism, facilitated by aviation.

5.8 Eurostat 2015 Tourism figures

Eurostat figures for 2015 show that Ireland had an **800m** euro Tourism deficit when comparing outbound to inbound tourism.



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File:Travel receipts and expenditure in balance of payments, 2010-2015-2021.png

File File usage

Travel receipts and expenditure in balance of payments, 2010-2015-2021

	Receipts				Expenditure				Balance
	(€ million)			Relative to GDP	(€ million)			Relative to GDP	(€ million)
	2010	2015	2021	2021 (%)	2010	2015	2021	2021 (%)	2021
EU(')	96 200	136 062	64 354	0.4	80 421	94 807	44 791	0.3	19 563
Belgium	8 620	7 090	5 326	1.1	14 313	12 311	12 404	2.5	-7 078
Bulgaria	2 574	2 825	2 100	3.0	626	1 006	1 092	1.5	1 008
Czechia	5 419	5 465	2 611	1.1	3 216	4 304	2 733	1.1	-122
Denmark	4 420	6 027	3 813	1.1	6 809	8 103	6 318	1.9	-2 505
Germany	26 159	33 265	18 806	0.5	58 934	69 859	40 729	1.1	-21 923
Estonia	824	1 347	542	1.7	481	925	578	1.8	-36
Ireland	3 106	4 315	2 272	0.5	5 358	5 143	2 166	0.5	106
Greece	9 611	14 126	10 502	5.8	2 156	2 038	1 112	0.6	9 390

5.9 Dublin Airport Red C poll

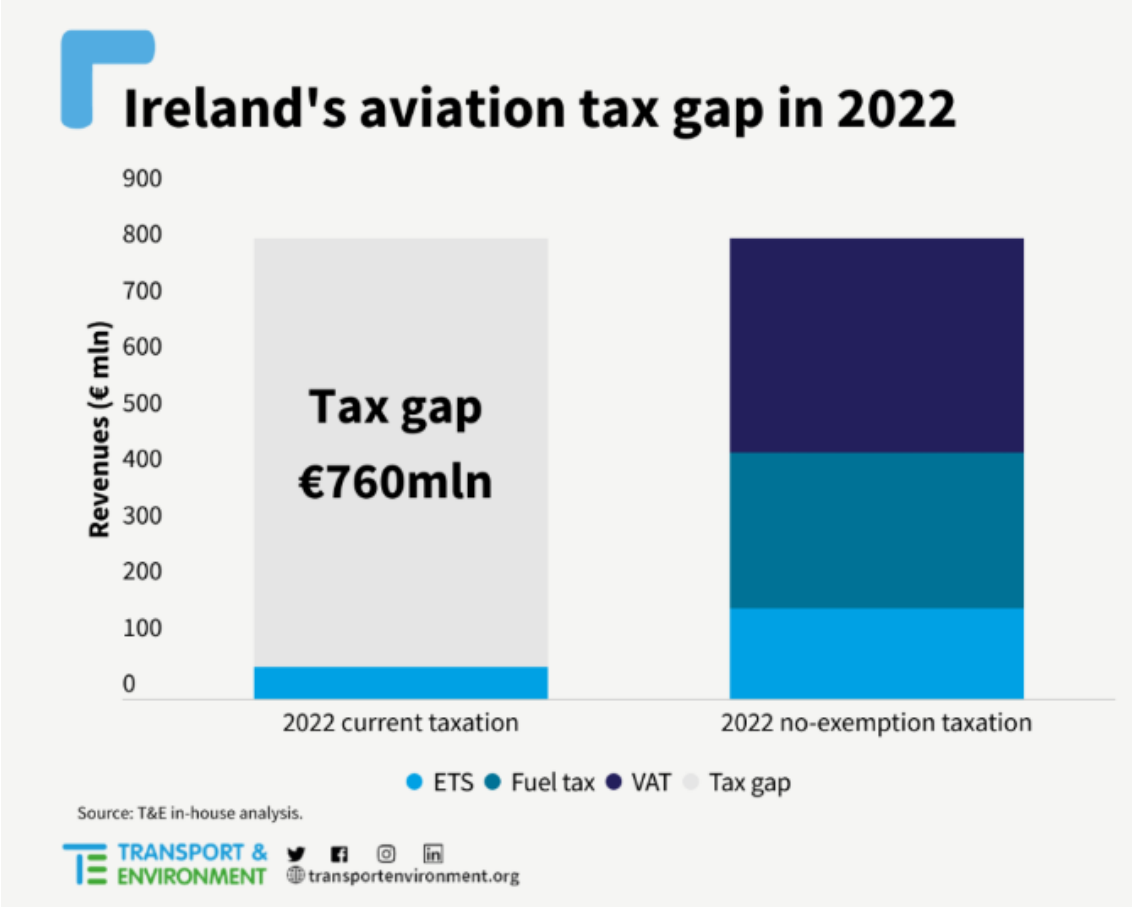
Based on a Dublin Airport Red C poll survey data presented by RouteOnline.com In June 2023, Irish people intend to spend an average of 2,800 euro each on foreign holidays this year.



5.10 Transport & Environment

A report by environmental NGO Transport & Environment, highlighted that the Irish Government lost out on a potential 760 million euro on lost revenue by not taxing aviation fuel:

https://www.transportenvironment.org/discover/irish-government-lost-out-on-close-to-760-million-in-aviation-taxes-last-year/



The report further states:

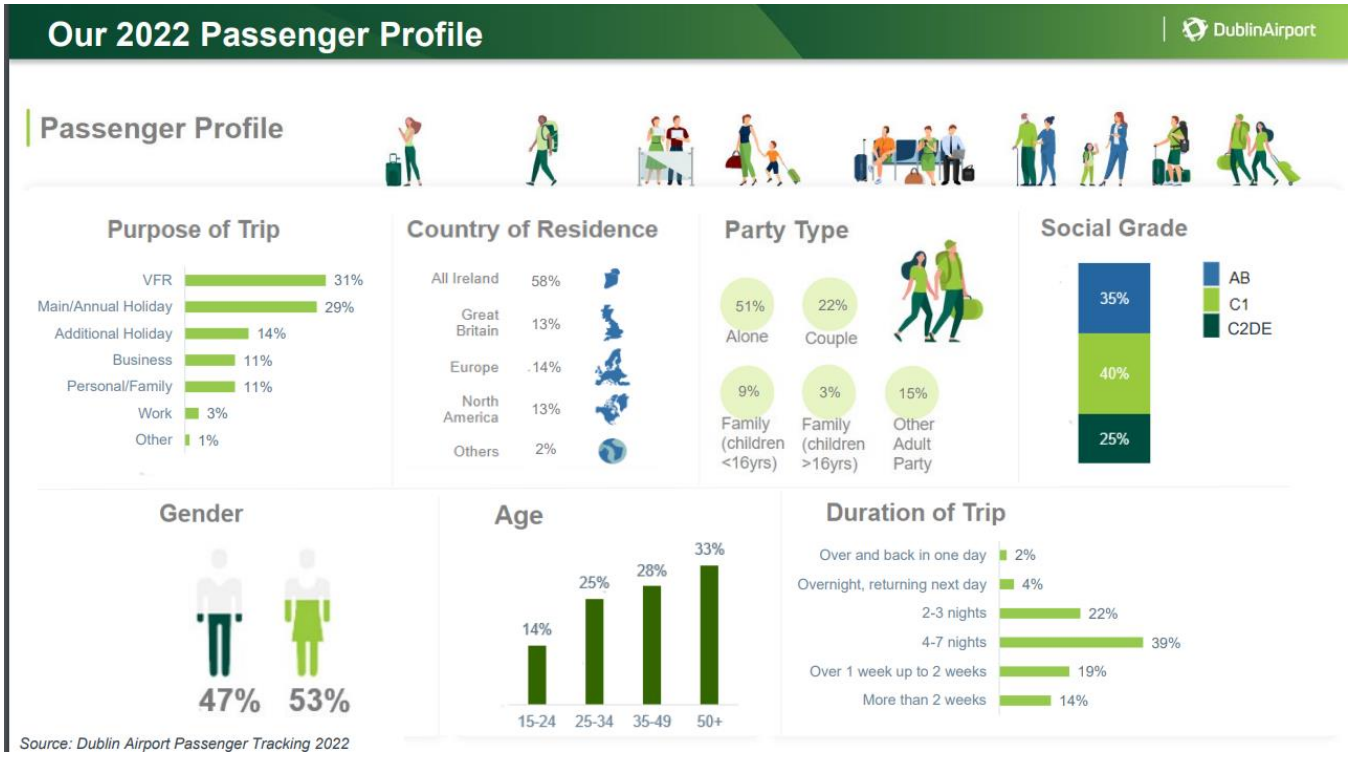
> "*Unless action is taken, the tax gap in Ireland will increase by 25% by 2025, as the sector is set to grow in coming years. Eurocontrol estimates that traffic will reach 92% of pre-COVID levels in 2023 and a full recovery by 2025. By then, the tax gap in Ireland could grow to* ***€950 million****, T&E finds.*"

5.11 Flight Statistics

From the daa's own statistics it's very evident that the growth in aircraft movements is mainly driven by leisure activity.

Just 11% of passengers in 2022 were business travellers:

https://www.dublinairport.com/b2b/airline-support/dubplus-partner-marketing/performance-data



Dublin Airport has facilitated a large growth in outbound leisure activity, and this is leading to a large increase in GHGs and encouraging Irish residents to holiday abroad.

6.0 CLIMATE CHANGE

6.0 What has changed

This is a revision of chapter 5.0 of the appeal document. It has an additional section on a legal opinion on the inclusion of aviation emissions in the Paris Agreement. There's also an additional Chatham House report and updated data from Climate Trace at COP28, highlighting Dublin Airport as Ireland's number 1 GHG emitter. The GHG emissions section has been updated based on the revised figures in the EIAR Supplement. The figures show that the daa have failed to properly quantify GHG emissions and failed to assign the significance as '**major adverse**' as per IEMA guidelines. GHG emissions were never assessed in the original EIS from 2004 and therefore no significance baseline was established in the 2007 planning permission. Therefore, all effects of Dublin Airport's activities need to be compared and this results in a **'major adverse'** significance finding.

6.1 EIAR

Chapter 11 of the revised EIAR focuses on Climate and Carbon. Section 11.1.2 quotes the Directive 2014/52/EU:

> *"Climate change will continue to cause damage to the environment and compromise economic development. In this regard, it is appropriate to assess the impact of projects on climate (for example greenhouse gas emissions) and their vulnerability to climate change*."

Annex IV of the Directive, part 5. (f) requires a description of the likely significant effects of the project on the environment resulting from:

> *"(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change*;"

It further states:

> "*The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and* ***long-term****, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project*."

The factors specified in Article 3(1) are:

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) the interaction between the factors referred to in points (a) to (d).

Therefore, it is clear that long-term effects of the Relevant Action should be taken into account along with any other past or future projects.

In section 11.2.5 the EIAR refers to the Climate Action and Low Carbon Development Acts 2015 to 2021 and its target to reduce emissions by 51% by 2030 and reach net zero by 2050.

Section 11.2.21 refers to Fingal County Council's Climate Change Action Plan 2019 – 2024 and how the Council "*recognises the Climate Emergency as declared by the Dáil and commits itself in this plan to prioritising mitigation of, and adaptation to, climate change across its functions*".

Section 11.3.6 states that the Permitted Scenario was used as the baseline for the GHG emissions assessment. By using the Permitted Scenario as the baseline, the EIAR is giving the impression that the Permitted Scenario is acceptable. This is not the case as even with the Permitted Scenario, GHG emissions will rise. This conflicts with the Government policies to reduce GHG emissions by 51% by 2030. The baseline should take account of future reduction targets as defined by the Institute of Environmental Management & Assessment (IEMA) definition of '***Future Baseline'*** in their guide on '*Assessing Greenhouse Gas Emissions and Evaluating their Significance*':

(https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010056/TR010056-001649-Climate%20Emergency%20Planning%20and%20Policy%20-%20Appendix%20A%20-%20IEMA%20Guide-%20Assessing%20Greenhouse%20Gas%20Emissions%20and%20Evaluating%20their%20Significance,%20Version%202,%20Feb%202022.pdf)

The IEMA guide refers to three overarching principles that are relevant in considering the aspect of significance for GHG emissions:

> *"1. The GHG emissions from all projects will contribute to climate change, the largest interrelated cumulative environmental effect*
>
> *2. The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive (e.g. human health, biodiversity, water, land use, air quality)*
>
> *3. GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit; as such any GHG emissions or reductions from a project might be considered to be significant*".

This is very relevant in relation to the daa's Relevant Action application that any GHG emissions can be considered significant.

To meet Ireland's reduction targets, Environmental Impact Assessment must give proportionate consideration to whether and how a project will contribute to or jeopardise the achievement of these targets. The IMEA guide states:

> "***The crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050***".

Therefore, when determining significance, it is important to consider the net zero trajectory in line with the Paris Agreement's 1.5°C pathway. Also, the timing of reductions is critical to the cumulative effect of GHG emissions.

The IMEA guide provides in Figure 5 a graphical form of how to determine significance and how the GHG emissions align with the UK's net zero compatible trajectory:

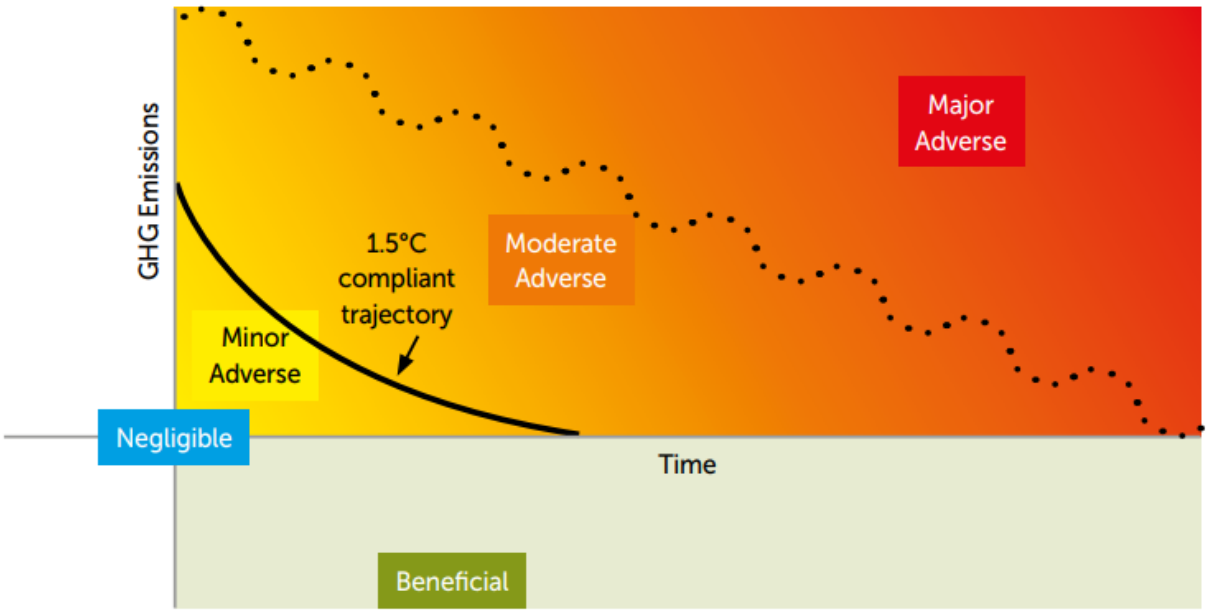


Figure 5: Different levels of significance plotted against the UK's net zero compatible trajectory[36]

The guide states that:

> "*A project that follows a 'business-as-usual' or 'do minimum' approach and is not compatible with the UK's net zero trajectory, or accepted aligned practice or area-based transition targets, results in a* ***significant adverse effect***".

The guide provides examples of significance criteria in Box 3:

Box 3: Examples of significance criteria

For the avoidance of doubt IEMA's position that all emissions contribute to climate change has not changed. This Box 3 provides practitioners with examples of how to distinguish different levels of significance. Major or moderate adverse effects and beneficial effects are ***considered to be significant****. Minor adverse and negligible effects are* ***not considered to be significant****.*

Major adverse: *the project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.*

Moderate adverse*: the project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.*

Minor adverse: *the project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.*

Negligible: *the project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.*

Beneficial*: the project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.*

The proposed Relevant Action therefore is considered to be of **Major Adverse Significance**.

6.2 Paris Agreement

The NGO Transport & Environment (T&E) commissioned a legal opinion highlighting that Shipping and Aviation are subject to the Paris Agreement:

https://www.transportenvironment.org/discover/shipping-and-aviation-are-subject-to-the-paris-agreement-legal-analysis-shows/

Ireland has excluded shipping and aviation from its first two Carbon Budgets but that does not absolve the responsibility to take these emissions into account in line with the Paris Agreement.

T&E commissioned a legal briefing that shows that shipping and aviation are included. Unlike the Kyoto Protocol, the central pillar of the Paris Agreement is a temperature goal. Signatories of the agreement are obligated to implement "*economy-wide absolute emission reduction targets*", that is, to control anthropogenic emissions so that global warming is limited to well below 2^{o}C and preferably stays within the limit of 1.5^{o}C. A failure to address all anthropogenic emissions, including shipping and aviation, would violate the central aim of the Agreement.

T&E provide a link to the legal advice:

https://www.transportenvironment.org/wp-content/uploads/2021/10/Re-Aviation-Shipping-NDC-UPDATED-Legal-Advice-Final-3-5-21-corr-1.pdf

as well as a legal briefing:

https://www.transportenvironment.org/wp-content/uploads/2021/10/Briefing-paper-NDCs-legal-advice-Aviation-Shipping-Final-2021-2.pdf

The briefing argues that shipping and aviation are clearly subject to the obligations of the Paris Agreement and must be included in Nationally Determined Contributions (NDCs) of signatories. It is the obligation of the signatories to ensure emissions are in line with the temperature goals of the Paris Agreement and this obligation cannot be handed over to international offsetting organisations.

The briefing states that:

> "*The European Union already includes outgoing aviation emissions in its NDC. The UK has recently included international transport emissions in its carbon budget, demonstrating that states are realising their legal responsibilities in regards to these emissions.*"

T&E report on the UK's decision to include shipping and aviation emissions in their NDCs:

https://www.transportenvironment.org/discover/uk-closes-loophole-plane-and-ship-emissions-carbon-budget/

Unfortunately, Ireland is a laggard in this regard. However, shipping and international aviation emissions are not excluded from Ireland's third Carbon. Therefore, it's imperative that they are added and accounted for.

The legal briefing concludes:

> "*The legal advice is clear: Parties must report all emissions from shipping and aviation in their NDCs."*
>
> *"There is no legal basis for excluding them.*"

6.3 Emissions Data

In section 11.3.17 the report lists the permitted and proposed ATM projections for 2025 and 2035 in Table 11-1. **Note there's an error with the difference between 2035 Permitted and Proposed**. The variation should be 12,000 movements (240,000 minus 228,000 = 12,000).

Table 11-1: Permitted and Proposed Annual ATM Projections for each Assessment Year (000s)

Year	Scenario		
	Permitted	Proposed	Variation
2025	227	240	13
2035	228	240	0

Please also note that the number of movements forecast in 2025 Proposed, 240,000, is larger than the number previously forecast, 236,000. Therefore, this revised application has more aircraft movements and therefore obviously more emissions.

The number of aircraft movements in this significant information submission is different compared to those previously published. In the previous EIAR, table 13-1 was as follows:

Table 13-1: Assessment Years, Scenarios, PAX and ATMs

Assessment Years and Scenarios	Predicted Annual Passengers (PAX) (millions per annum)	Permitted vs Proposed Difference in PAX (millions)	Air Traffic Movements (ATMs) ('000s per annum)	Typical 'Busy Day' Night-Time ATMs (23:00-07:00)
2022 Permitted	19.6	n/a	166	51
2022 Proposed	21.0	1.4	176	82
2025 Permitted	30.4	n/a	227	60
2025 Proposed	32.0	1.6	236	98
2035 Permitted	32.0	n/a	236	60
2035 Proposed	32.0	0.0	236	98

In the latest EIAR table 13-1 has been revised as follows:

Table 13-1: Assessment Years, Scenarios, PAX and ATMs

Assessment Years and Scenarios	Predicted Annual Passengers (PAX) (millions per annum)	Permitted vs Proposed Difference in PAX (millions)	Air Traffic Movements (ATMs) ('000s per annum)	Typical 'Busy Day' Night-Time ATMs (23:00-07:00)
2025 Permitted	31.8	n/a	227	60
2025 Proposed	32.0	0.2	240	114
2035 Permitted	32.0	n/a	228	60
2035 Proposed	32.0	0.0	240	114

2025 Permitted is the same, 2025 Proposed has increased by 4k movements, **2035 Permitted has reduced by 8k movements** and 2035 Proposed has increased by 4k movements. The 8k reduction in 2035 Permitted makes no sense whatsoever and no reason is given. 2035 Permitted is at 32m passengers, the same as 2035 proposed**. It is clear that the 2035 Permitted figure is yet another error.**

The IEMA guidance states that:

> "***The crux of significance therefore is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050.***"

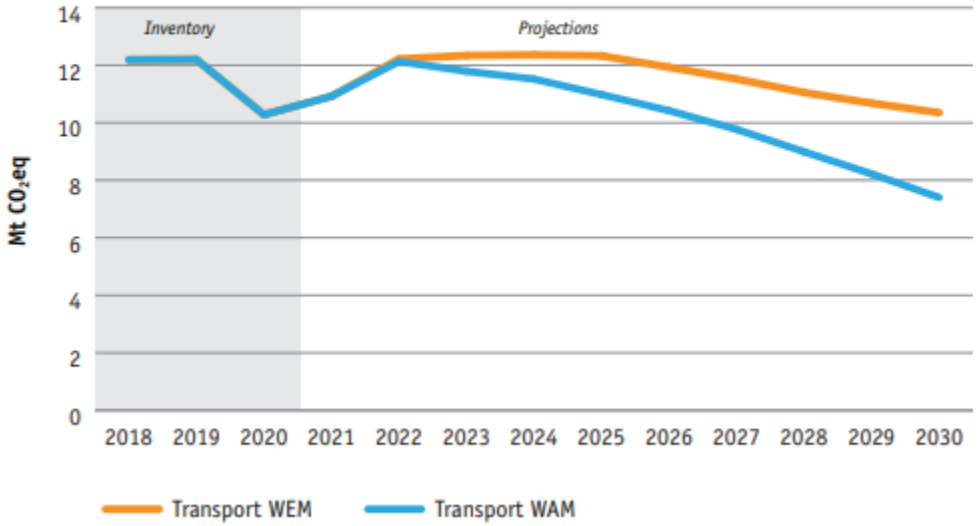
The guidance further states that a project that follows a '*business-as-usual'* or '*do minimum'* approach and is not compatible with the UK's net zero trajectory or accepted aligned practice or area-based transition targets, **results in a significant adverse effect**.

It is evident that GHG emissions will rise from the implementation of the Relevant Action and does not meet the trajectory of net zero. Therefore, this equates to a significance level of '**major adverse'**.

The analysis provided in the appeal document and this response to the significant information request uses the latest GHG emission projections from the EPA in their June 2022 report (https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Ireland's-GHG-Projections-Report-2021-2040v4.pdf).

In the EPA report, it states that under the '*With Additional Measures'* scenario, Transport emissions are projected to decrease by 28% over the period 2020 to 2030 from 10.3 to 7.4 Mt CO_2 eq.

Figure 9: Greenhouse Gas Emissions Projections from the Transport Sector under the *With Existing Measures* and *With Additional Measures* scenarios out to 2030



Note these projections do not include aviation emissions but these are a good proxy for what the sector should be aspiring to.

The '*With Existing Measures'* scenario forecasts Ireland's emissions including all national policies and measures implemented by the end of 2020. These include measures in the National Development Plan (NDP) and Climate Action Plan 2019.

The '*With Additional Measures'* scenario includes government policies and measures to reduce emissions such as those in Ireland's Climate Action Plan 2021. This was published in November 2021.

The EPA report states that:

> "*Ireland's national emission reduction objectives as set in the Climate Action and Low Carbon Development (Amendment) Act 2021, are to achieve a 51% emissions reduction by 2030 compared to 2018 and achieve a climate neutral economy by no later than the end of 2050*".

Tables 11-3 and 11-4 present the projections of the Landing and Take Off (LTO) phase and Climb, Cruise and Descent phase (CCD) Emissions of the Permitted versus the Proposed scenarios.

What is alarming is the difference in values to what was presented in the previous EIAR. For example, 2025 Permitted LTO emissions jump from 314,268 to 397,835 and 2025 Proposed jumps from 326,482 to 414,489 tCO2e. The same is true for 2035 Permitted and Proposed and for the equivalent CCD emissions. There is no explanation as to these sizeable differences in emissions.

And recall from table 11-1 above, 2025 Permitted aircraft movements have stayed the same while 2025 Proposed movements increased by 4k.

There's no explanation why 2035 Permitted LTO emissions are higher than 2035 Proposed even though there are 12k more movements in the Proposed scenario.

The CCD emissions are just as confusing and non sensical. It is very apparent that these figures cannot be trusted. An 11.43% reduction in 2035 CCD emissions between the Proposed and Permitted scenarios even though the Proposed scenario has 12k more movements.

The Board cannot trust these values and consequently this Relevant Action application must fall, or the Board must get an independent evaluation of the emissions.

In section 11.7.2 it states that the reduction in nighttime flights will fall mainly on the home-based carriers and affect short haul flights primarily. But it further states that the short haul flights that are removed from the night schedule are expected to be replaced with long haul flights during the day. There is no evidence in any of the data submitted by the daa to back up this statement. This is a critical part of the revised Climate chapter, and this acceptance has a significant impact on the emissions reported.

Assessment of Significance of Effects

11.7.2 In 2025, under the Proposed Scenario, an increase in flights is expected to lead to an increase in GHG emissions compared to the Permitted Scenario. However, in 2035, a decrease in emissions is expected between the Permitted and Proposed Scenarios. While there are the same number of flights in each scenario, some of the short-haul night flights that have been modelled as part of the Proposed Scenario do not occur under the Permitted Scenario (as per the Mott McDonald Impact of the Operating Restrictions Report which concludes that Permitted Scenario has a disproportionate impact on the base carriers with mostly short haul flights being affected) and are expected to be replaced with long-haul day flights, therefore leading to increased CCD emissions under the Permitted Scenario. This increase in short-haul flights and decrease in long-haul flights under the Proposed Scenario for 2035 (relative to the Permitted Scenario) results in lower CCD emissions associated with these flights.

The Board cannot rely on a comment like this and must interrogate the daa's forecasts and satisfy themselves on where a sizeable number of new long-haul flights are going to come from.

The Mott MacDonald report from the revised 2021 EIAR shows that up to 51 nighttime flights will be lost due to the Permitted Scenario in 2025. These will include some long-haul flights but will primarily be short haul.

Dublin Baseline Night Movement Allocation

Carrier	Flight Type	2025 Demand	2025 Allocation	Reduction	
Aer Lingus	Pax Scheduled	41	21	-49%	
Ryanair	Pax Scheduled	47	23	-51%	
Stobart	Pax Scheduled	2	0	-100%*	Minor retime
Air Moldova	Pax Scheduled	1	1	0%	
Aegean	Pax Scheduled	2	1	-50%	
Air France	Pax Scheduled	1	1	0%	
Cathay Pacific	Pax Scheduled	1	0	-100%*	New after 2022
Ethiopian Airlines	Pax Scheduled	4	3	-25%	
KLM	Pax Scheduled	1	1	0%	
Lufthansa	Pax Scheduled	3	2	-33%	
Aeroflot	Pax Scheduled	1	1	0%	
United Airlines	Pax Scheduled	1	0	-100%*	10min retime
Tomsonfly	Pax Charter	2	2	0%	
TNT	Cargo	1	1	0%	
Bluebird Cargo	Cargo	1	1	0%	
FedEx	Cargo	1	1	0%	
DHL	Cargo	2	2	0%*	Retime not possible
UPS	Cargo	2	2	0%*	Retime not possible
XM Cargo	Cargo	2	2	0%*	Retime not possible
Total		**116**	**65**	**-44%**	
GA/Positioning		5			
Total		**121**			

The updated Mott MacDonald reports lists the number of short haul and long-haul movements for 2019, 2025 Proposed and 2025 Permitted (constrained).

Dublin Forecast Night Movement Demand 23:00 – 07:00 (based on busy day schedules)

Flight Type	2019	2025	Constrained
Pax Scheduled	101	103	59
Short haul	*84*	*87*	*50*
Long haul	*17*	*16*	*9*
Pax Charter	3	2	0
Cargo	9	24	6
Scheduled sub-total	**113**	**129**	**65**
Other	3	4	0
Total	**116**	**133**	**65**

It highlights that 7 long-haul movements will be lost between 2025 Proposed and 2025 Permitted. This is a significant number of long-haul flights, and this reduction would have a significant impact on lowering the emissions for 2025 Permitted compared to 2025 Proposed. Yet the daa is trying to argue that there will be more long-haul flights in the Permitted scenario leading to higher emissions.

Another important point made in the September 2021 Mott MacDonald report is the pattern of demand for flights. It states that long haul arrivals are concentrated in the early morning period and departures from mid-morning to early afternoon.

- Long haul arrivals are concentrated in the morning period, with an early peak in the 05:00 hour and a broader peak around 08:00. Departures are spread from the mid-morning to early afternoon. This pattern of demand is typical of transatlantic services, where evening departures from North America fly overnight to arrive in DUB in the morning. Arrival times in DUB tend to be earlier than at other European airports due to Ireland's close proximity to North America and its time zone being 1h earlier than Central European Time.

Therefore, the demand is for long haul arrivals in early morning and departures from mid-morning. This contradicts the statement in section 11.7.2 that short haul flights are expected to be replaced with long haul day flights. Therefore, this expectation of more long-haul day flights is pure fiction, with the intention of distorting the GHG emission figures. The Board should reject this application on the grounds of deceitful manipulation of the GHG figures. None of the figures can be trusted.

Table 11-6 presents the projected total GHG emissions for the Permitted and Proposed scenarios for 2025 and 2035:

Table 11-6:Total Annual GHG Emissions Projections – Permitted vs Proposed Scenarios

Year	Total Annual GHG Emissions (tCO_2e)			
	Permitted	Proposed	Variation	% Variation (permitted to proposed)
2025	4,119,144	4,167,017	**47,873**	1.16%
2035	4,646,010	4,187,473	**-458,537**	-9.87%

What stands out is that these figures are far higher than the ones presented in the 2021 EIAR, which are included below for comparison. The individual figures have increased by nearly 1 million tCO2e but no explanation has been given as to the significant increases.

Year	Total Annual GHG Emissions (tCO_2e*46*)			
	Permitted	Proposed	Variation	% Variation (permitted to proposed)
2025	3,101,502	3,203,276	**101,774**	3.28%
2035	3,185,352	3,128,361	-56,991	-1.79%

The variation between 2025 Proposed and Permitted has reduced from 101,774 to 47,873 tCO2e. And as a result, the % variation also reduces from 3.28% to 1.16%.

There is no explanation given as to the significant change in GHG emissions. The number of ATMs has only increased by 4k movements in 2025 Proposed in the significant information request. That is just a 1.7% increase in ATMs. That does not account for the one third increase in GHG emissions. Without an explanation, these figures cannot be verified or trusted. Alarm bells should be going off with such a change in GHG emissions. It is very evident that the figures do not stack up in comparison to the figures given in the 2021 EIAR.

The analysis in the Climate chapter focuses only on the variation in GHG emissions between the Proposed and Permitted Scenarios. But from the IEMA guidelines all GHG emissions need to be assessed.

A good proxy is the Projected National Emissions Inventory compiled by the EPA:

https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Data-file-for-Web---Ireland_2022_GHG_Emission_Projections_2021-2040v1.xlsx.

Year	Projected National Emissions Inventory (kt CO_2e)
2022	61950
2025	55320
2035	38400

Focusing on 2025 Proposed, from table 11-6 its GHG emissions of 4,167 ktCO2e equate to **7.5%** of the Projected National Emissions Inventory for 2025 of 55,316 ktCO2e, which is **very significant**.

For 2035 Proposed, its GHG emissions of 4,187 ktCO2e equates to **10.9%** of the Projected National Emissions Inventory for 2035 of 38,397 ktCO2e, which again is **very significant**.

In table 11-8 the GHG emissions are compared against the Future Transport Emissions Inventory.

Table 11-8: GHG Emissions Against Future Transport Emissions Inventory Scenarios

Year	Additional Annual GHG Emissions (kt CO_2e)	Projected National Emissions Inventory (kt CO_2e)	Emissions as a % of National Emissions Inventory
2025	101.8	12,490	0.81%
2035	-57.0	11,000	-0.52%

The figures of 12,490 for 2025 and 11,000 for 2035 are **incorrect** and are from Ireland's Greenhouse Gas Emissions Projections 2018-2040 published in 2019, https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Ireland_2019_GHG_Emission_Projections_2018-2040.xlsx, and not the more recent 2021-2040 projections, https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/Data-file-for-Web---Ireland_2022_GHG_Emission_Projections_2021-2040v1.xlsx.

The correct figure for 2025 is 10,980 and 5,940 for 2035.

In fact, all the figures for table 11-8 are incorrect. This table is the exact same as table 11-8 in the 2021 EIAR.

Total emissions in 2025 Proposed are 4,167 ktCO2e which is **38%** of the Future Transport Emissions, 10,980.

Total emissions in 2035 Proposed are 4,187 ktCO2e which is **70.5%** of the Future Transport Emissions, 5,940.

These total emissions **are highly significant** and highlights how aviation compares to all other forms of transport.

It has been impossible to quantify the variation in GHG emissions between the Proposed and Permitted scenarios for 2025 and 2035 as the figures are not reliable. The onus is on the Board to independently interrogate the daa's schedules and have the GHG figures recalculated and restated. The figures cannot be trusted for the reasons given.

The applicant attempts to assess the GHG emissions in relation to the net zero trajectory. It only focuses on the variation between the Proposed and Permitted scenarios. The Permitted figures cannot be trusted. Therefore, the overall trajectory of the Proposed scenario cannot be properly assessed.

<u>Large Scale Developments:</u>

In section 6.3 of the IEMA Guidelines special attention is drawn to large scale developments:

> "*that in themselves have magnitudes of GHG emissions that materially affect the UK's or a devolved administration's total carbon budget*".

It further states that:

> "*An indicative threshold of **5%** of the UK or devolved administration carbon budget in the applicable time period is proposed, at which the magnitude of GHG emissions irrespective of any reductions is likely to be **significant**. A project that meets this threshold can in itself materially affect achievement of the carbon budget*."

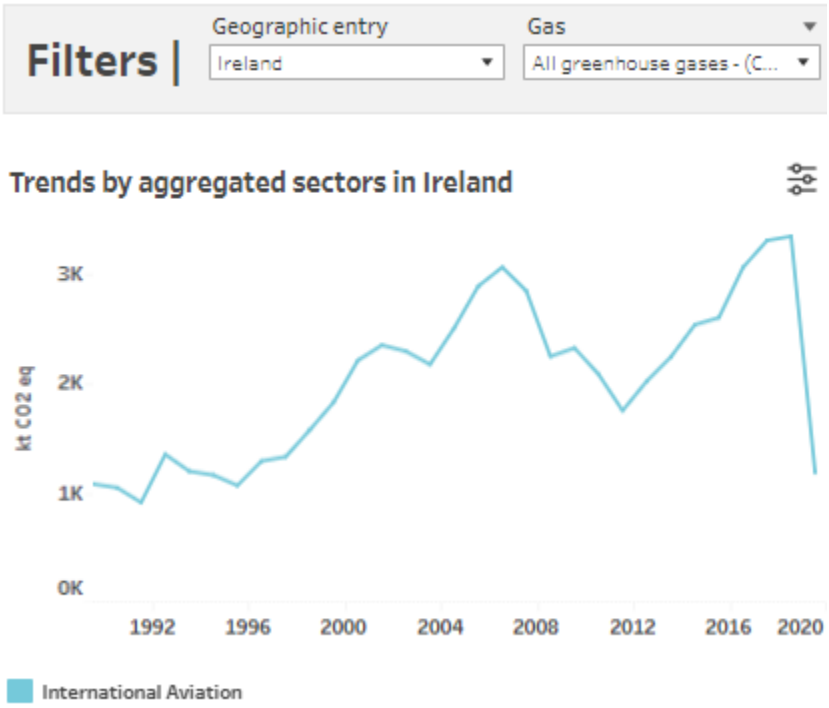
Cumulative Effects:

To demonstrate the cumulative effect at a national level, the GHG assessment has been considered in the context of Ireland's National GHG emissions. The impacts of cumulative activities are limited to Dublin Airport. All emissions from the 2025 and 2035 Proposed scenarios are assessed relative to the annual Carbon Budgets.

Carbon Budget	Total Budget (MTCO2e)	Annual Budget (MTCO2e)	2025 Proposed (MTCO2e)	% Contribution of Proposed Scenario
2021-2025	295	59	4.167	7.1%
2026-2030	200	40	4.187	10.5%

As stated by the IEMA, all emissions can be considered significant. The cumulative effect of all emissions at Dublin Airport due to all aircraft movements are significant and above the IEMA's 5% threshold.

The European Environment Agency (EEA) provide a dashboard for viewing GHG gases (https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer).



It is evident that Ireland's aviation emissions reached a new peak in 2019 at 3,344 kt CO2eq, having peaked previously in 2007. Using the data from the EEA dashboard, emissions from International Aviation rose from 1,751 to 3,344 $ktCO_2e$ from 2012 to 2019, an 100% rise in emissions in that 7-year period.

Domestic Transport increased from 10,825 to 12,197 $ktCO_2e$, which is an increase in absolute emissions of 1,372 $ktCO_2e$, equivalent to a 12.7% rise in emissions.

This highlights that International Aviation emissions grew 100% from 2012 to 2019 compared to a 12.7% rise in Domestic Transport emissions.

The data proves that International Aviation emissions attributed to Ireland were increasing at an alarming rate pre Covid and needs to be addressed immediately if we are to meet the net zero target by 2050.

The Relevant Action will increase these GHG emissions even further and therefore these emissions have a significance of '***major adverse***' as per the IEMA guidelines.

A new report was published by the SEAI, https://www.seai.ie/data-and-insights/seai-statistics/key-publications/national-energy-balance/Key-Insights-from-2022-National-Energy-

Balance.pdf, in September 2023. It highlighted that Transport accounted for 41.3% of total energy demand in 2022, with Aviation accounting for 20.4% of the transport energy in 2022.

The SEAI's Energy Balance is a key input to the EPA's GHG Inventory and helps determine Ireland's progress against our Carbon Budgets and sectoral emissions ceilings.

The report states:

> *"EPA analysis shows that 2-years into the first 5-year carbon budget (2021-2025) Ireland has already emitted 46.6% of its allowable GHG, which means we have used 46.6% of our budget in the first 40% of the time. This mismatch shows that* ***Ireland is over-emitting with respect to its guideline trajectories****. Further EPA analysis shows that all sectors in the carbon budgets are "off trajectory" to satisfy their 2021-2025 sectoral emission ceilings (SECs). For example, the electricity sector has emitted 49% of its SEC in the first 40% of the 2021-2025 carbon budget, the industry sector has emitted 46% of its SEC, the buildings (residential) sector has emitted 45% of its SEC, and transport has emitted 42% of its SEC.*
>
> *EPA projections, informed by SEAI's National Energy Projections (NEPs), indicate that without an increased suite of policies and measures, Ireland could emit between 340 MtCO2e (WEM) and 332 MtCO2e (WAM) in the 2021-2025 period. Given the legally binding carbon budget for that period is 295 MtCO2e,* ***this indicates a potential overshoot of 12-15%, or 37-45 MtCO2e (cumulative)****. It should be noted that any such exceedance in the first carbon budget must be "carried over" and addressed in the second carbon budget period (2026-2030). This will result in lower sectoral emission ceilings for the second carbon budget, requiring steeper decarbonisation trajectories."*

The Climate Change Advisory Council (CCAC) is an independent advisory body tasked with assessing and advising on how Ireland can achieve the transition to climate-resilient biodiversity-rich, environmentally sustainable and climate-neutral economy. The Council works to provide contributions in critiquing, informing and shaping Ireland's response to climate change.

The Council also has a Carbon Budgets Working Group tasked:

> *"with assisting and advising the Council in development of a methodology and evidence base for carbon budget proposals, in particular to provide modelling and analytical support for the development of carbon budget proposals. The Carbon Budgets Working Group will provide the Council with key findings, recommendations and outputs for consideration in the context of the Council's role in submitting carbon budget proposals to Government for the finalisation of Carbon Budget 3 from 2031-35 and a proposal for Carbon Budget 4 from 2036-40, which are due by the end of 2024*".

The Council published a Working Paper on their website, Working Paper No. 25, dated December 2023, titled "*Carbon Budgeting in Selected Countries*".

In the Executive summary under 'Blind spots' it references the current exclusion of aviation emissions from Carbon Budgets:

> *"National level carbon budgets are devised by calculating a share of the remaining global carbon budget, and make implicit judgments regarding responsibility for historical emissions based on a given temporal range. Modelling parameters that are used to devise mitigation pathways also include important assumptions about risk, climate feedbacks, the cost of damages and the relative cost of inaction. These choices inevitably determine the scope and temporal range of the chosen carbon budget. Other potential 'blind spots' in carbon budgeting include the inclusion of large-scale negative emissions or carbon dioxide removal technologies,* ***the exclusion of aviation****, shipping and non-territorial emissions from carbon budgets, or assumptions about future offshore mitigation potential****. If aviation and shipping emissions, along with other non-territorial or consumption emissions, are not properly reported and accounted for in the carbon budgeting process, and strategies put in place to address them, they may evade scrutiny or mitigation planning****. Of particular relevance to Ireland is the ongoing debate about whether to use a different metric for methane, a potent greenhouse gas with a shorter lifetime than CO2. If non-CO2 mitigation contributions are not fully implemented in a timely manner, this affects the timing of reaching net-zero*

CO2 which must occur much sooner. The literature reviewed argues in favour of including all GHGs in carbon budgets as CO2 equivalent."

In the 'Conclusions and lessons learned' section it highlights a number of important lessons to be learned from other countries:

> ***"Aviation and shipping emissions should be reported transparently and mitigation strategies for these sectors included in the annual Climate Action Plan. Non-territorial emissions should be reported on an annual basis by the EPA or the Council**."*

Further on page 18 it states:

> ***"It is particularly striking that Ireland, with such a large (international) aviation sector, has no climate policy in respect of aviation emissions, a point which has been criticised by a number of civil society organisations and researchers. As Cormac O Raifeartaigh noted in 2022, the emissions associated with a return flight from Dublin to New York are not counted in the national emissions budget of either country. For this reason, there is little incentive for nations to reduce emissions associated with international flights.***
>
> ***Until aviation and shipping emissions, along with other non-territorial or consumption emissions, are properly reported and accounted for in the carbon budgeting process, and strategies put in place to address them, they will simply evade political scrutiny or mitigation efforts. According to the Climate Action Tracker website, aviation emissions should decrease by 90% by 2050, compared to present. Of the countries considered in this study, only France has implemented a clear policy to reduce aviation emissions by banning short-haul domestic flights if the journey can be completed in less than 2.5 hours by rail. The Dutch government has recently secured a legal ruling allowing it to implement a lower cap on the annual number of flights at Schipol airport from 500,000 to 460,000. By contrast, Ireland's Climate Action Plan 2023 does not include any measures for the aviation sector aside from a post-2030 commitment to promote sustainable aviation fuels. The Dublin Airport Authority is proceeding with its plans to get planning approval to increase the numbers of passengers it can accommodate annually from 32 million to 40 million."***

Dublin Airport is on target to handle over 33m passengers in 2023. A comparable year in terms of passenger numbers is 2019 when 32.9m passengers travelled through Dublin Airport

Using the EEA dashboard, the GHG emissions for 2019 amounted to 3,344 kt CO_2e. This figure is in line with the emission figures given by the daa in their 2021 EIAR:

Total Annual GHG Emissions (tCO_2e *46*)

Year	Permitted	Proposed	Variation	% Variation (permitted to proposed)
2025	3,101,502	3,203,276	**101,774**	3.28%
2035	3,185,352	3,128,361	**-56,991**	-1.79%

But the EEA figure is in contrast to the new figures published in the latest revised EIAR Supplement submitted as part of the significant information request:

Table 11-6:Total Annual GHG Emissions Projections – Permitted vs Proposed Scenarios

Total Annual GHG Emissions (tCO_2e)

Year	Permitted	Proposed	Variation	% Variation (permitted to proposed)
2025	4,119,144	4,167,017	**47,873**	1.16%
2035	4,646,010	4,187,473	**-458,537**	-9.87%

This is further damning evidence that the daa's revised figures cannot be trusted.

Another flaw with the daa's GHG emission calculations is that the 2025 and 2035 scenarios are assessed based on the passenger cap of 32m. The assessment has failed to take into account Government Policy to increase passenger numbers and is therefore not compliant with EIAR legislation and guidelines. Dublin Airport is on course to handle 33.2m passenger in 2023. The daa lodged a planning application in 2019 (F19A/0449) to increase passenger numbers from 32m to 35m but withdrew this application in 2020 when Covid struck. Future scenarios should be included in AA screening and assessment.

The daa have also formally announced a new 40m passenger planning application to be lodged before the end of 2023. Details are available at *https://dublinairport.exhibition.app/*.

From the daa's forecasts submitted to ANCA in their reporting template, 39.5m passengers (273180 movements) are forecast in 2035 with the cap removed for the Permitted scenario and 43.4m passengers (298614 movements) are forecast in 2035 with the cap removed for the Proposed scenario. Based on these movements with the 32m passenger cap removed, **25,434 additional movements are expected in 2035** with the Relevant Action.

Using the 2040 forecasts in the ANCA reporting template and the scenarios without the 32m cap, 317926 movements are forecast for the Proposed scenario and 288512 movements for the Permitted scenario, **resulting in an additional 29414 movements** with the Relevant Action.

Combining the 2035 and 2040 scenarios with the cap removed together with the revised figures from the daa for the scenarios limited to 32m:

Year	Permitted	Proposed	Variation	**% Increase**
2025	227,000	240,000	13,000	**5.7%**
2035 (with cap)	228,000	240,000	12,000	**5.3%**
2035 (no cap)	273,180	298,614	**25,434**	**9.3%**
2040 (no cap)	288,512	317,926	**29,414**	**10.2%**

The % increase in ATMs between the Proposed and Permitted scenarios acts as a good proxy for the % increase in annual GHG emissions shown in table 11-6.

6.4 Non-CO2 Effects on Climate Change

In the Planner's report, it dismisses the impact of non-CO_2 effects on Climate Change.

In a scientific paper from January 2021 titled 'The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018' (https://www.sciencedirect.com/science/article/pii/S1352231020305689?via%3Dihub), the authors state that 3.5% of total warming in 2011 was associated with aviation and that roughly two thirds of warming due to aviation at that time was caused by non-CO_2 sources. The aviation industry has been solely focused on CO_2 reduction, neglecting the necessity to reduce non-CO_2 aviation effects on Climate. In a Nature article published in July 2022 (https://www.nature.com/articles/s41558-022-01404-7), the authors state that:

> "*The aviation sector needs to neutralise CO_2 emissions and reduce non-CO_2 climatic effects. Despite being responsible for approximately two-thirds of aviation's impacts on the climate, most of aviation non-CO_2 species are currently excluded from climate mitigation efforts*".

Carbon offsetting will not be sufficient at reducing aviation's effects on Climate Change. The authors state:

> *"We demonstrate that simply neutralizing aviation's CO_2 emissions, if nothing is done to reduce non-CO_2 forcing, causes up to 0.4 °C additional warming, thus compromising the 1.5 °C target".*

The effects of non-CO_2 effects is also referenced by the EU Commission (https://ec.europa.eu/clima/eu-action/transport-emissions/reducing-emissions-aviation_en#tab-0-0):

> *"Aviation also has an impact on the climate through the release of nitrogen oxides, water vapour, and sulphate and soot particles at high altitudes, which could have a significant climate effect. A November 2020 study conducted by the European Aviation Safety Agency (EASA) looks into the non-CO_2 effects of aviation on climate change, and fulfils the requirement of the EU Emissions Trading System Directive (Art. 30.4).* ***Overall, the significance of combined non-CO_2 climate impacts from aviation activities, previously estimated to be at least as important as those of CO_2 alone, is now fully confirmed by the report****".*

This contradicts section 11.3.15 of the EIAR which states that the "*the science is uncertain, and these additional impacts are not included in EU or international policy making at present*".

The EASA report confirms that the EIAR has grossly underestimated the effects of aviation on Climate Change by not considering the effects of non-CO_2 effects. The report provides three possible options to address non-CO_2 effects:

- EASA environmental certification standards
- Reductions in fuel burn
- Monetary charge levied on aircraft NOx emissions
- Inclusion of non-CO_2 effects under EU ETS
- ATM management

In the '*Report from the Commission to the European Parliament and the Council*' (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0747&from=EN), it states:

> *"The significance of non-CO_2 climate impacts from aviation activities, previously estimated to be at least as important in total as those of CO_2 alone is fully confirmed by the report. This results in a need to consider how to best to address them further to contribute to the EU's climate objectives and the Paris Agreement, complementary to climate action already being taken. This would allow moving towards policies targeting aviation's full climate impacts. This would also result in co-benefits regarding local air quality".*

Non-CO2 effects are therefore a known issue and one that should have been included in the EIAR whilst analysing the significant effects of aircraft activities on Climate Change.

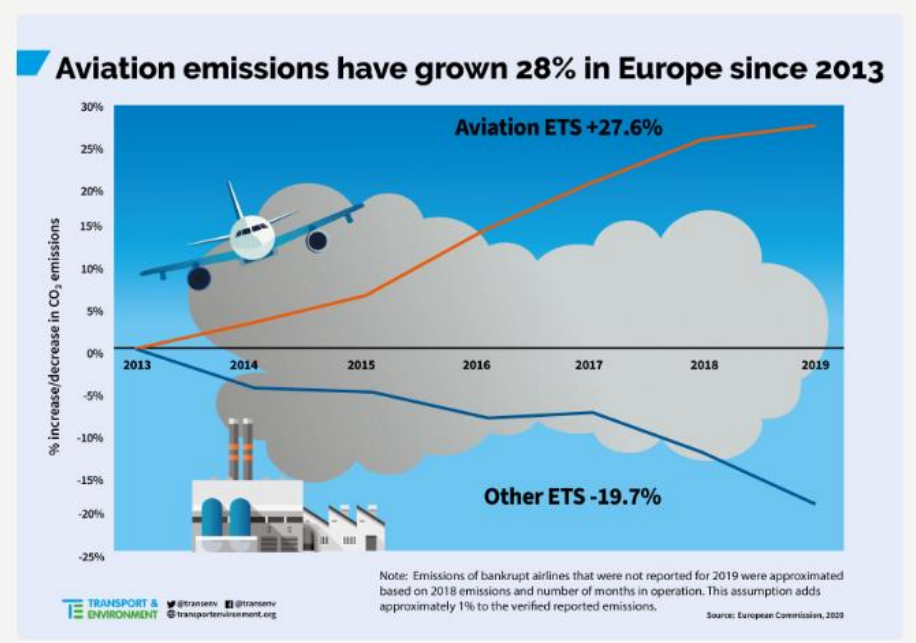
6.5 Transport & Environment

In an article (https://www.transportenvironment.org/state-aviation-ets/) produced by Transport & Environment (T&E), one of Europe's leading NGO's campaigning for cleaner transport, it states that figures for 2019 show that, unlike other sectors covered by the EU ETS, aviation emissions continued to grow by an estimated 1.5% in 2019. This compares to a fall of 8.9% in the emissions from other sectors covered by the ETS, such as power, coal, steel and cement. The figure of 1.5% growth in 2019 only covers flights within Europe and excludes flights to and from Europe.

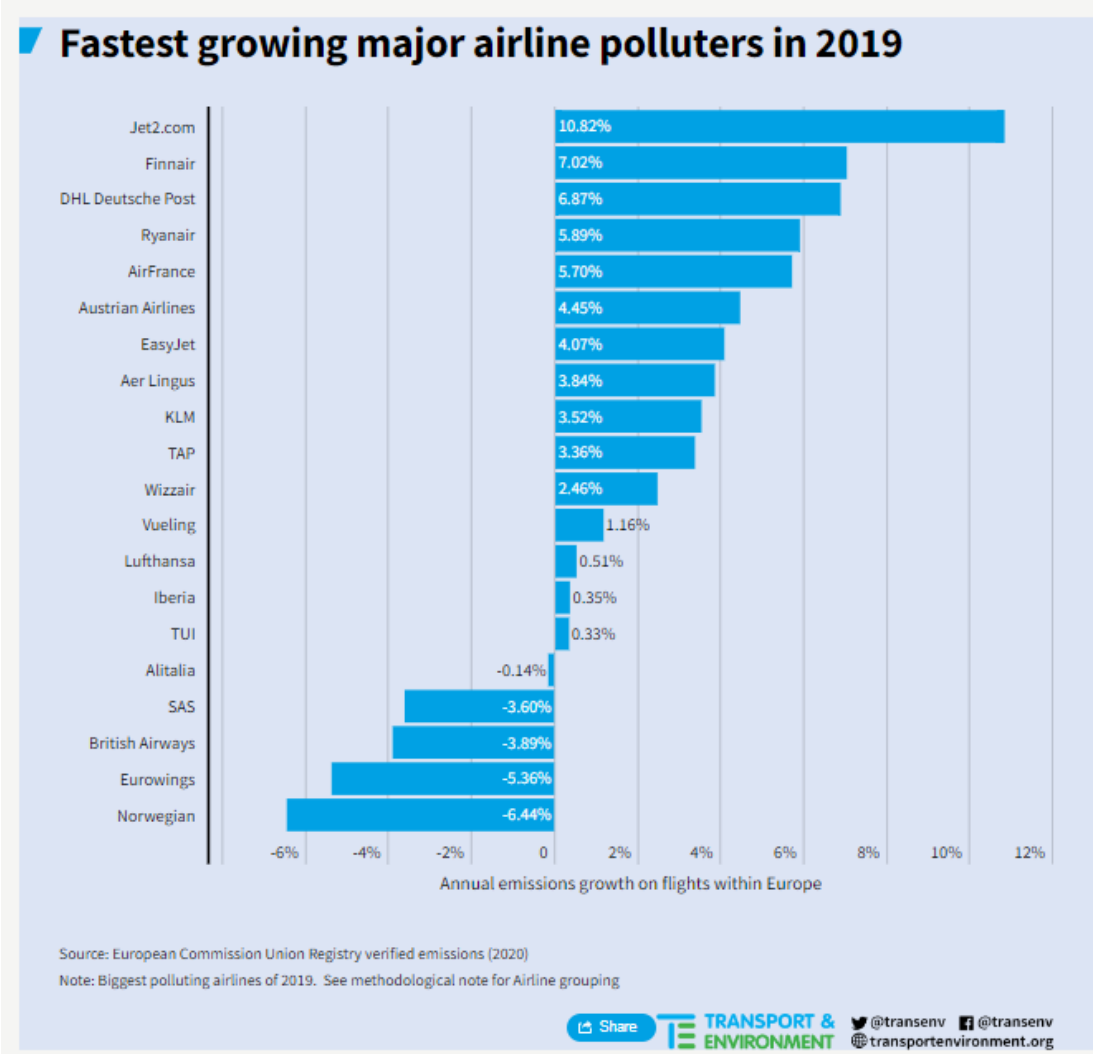
The article states that:

"*Reflecting the growth in emissions from this sector, airlines are an increasing presence among top emitters in different member states. In 2018, airlines were top 5 emitters in 13 member states (top 10 in 16 member states). In 2019 airlines were top 5 emitters in 14 member states, with Vueling reaching 5th spot in Spain. The aviation sector, including airports and airlines, is increasingly being recognised as a major emitter in states, after years of its emissions flying under the radar. This has led to increasing calls for these emissions to be included in national climate targets, a move supported by T&E.*"

The article states that since 2013, aviation emissions have increased 27.6% compared to a 19.7% decrease for other sectors in the ETS. Between 1990 and 2018, total EU aviation emissions grew from 1.5% of EU emissions to 3.6%.

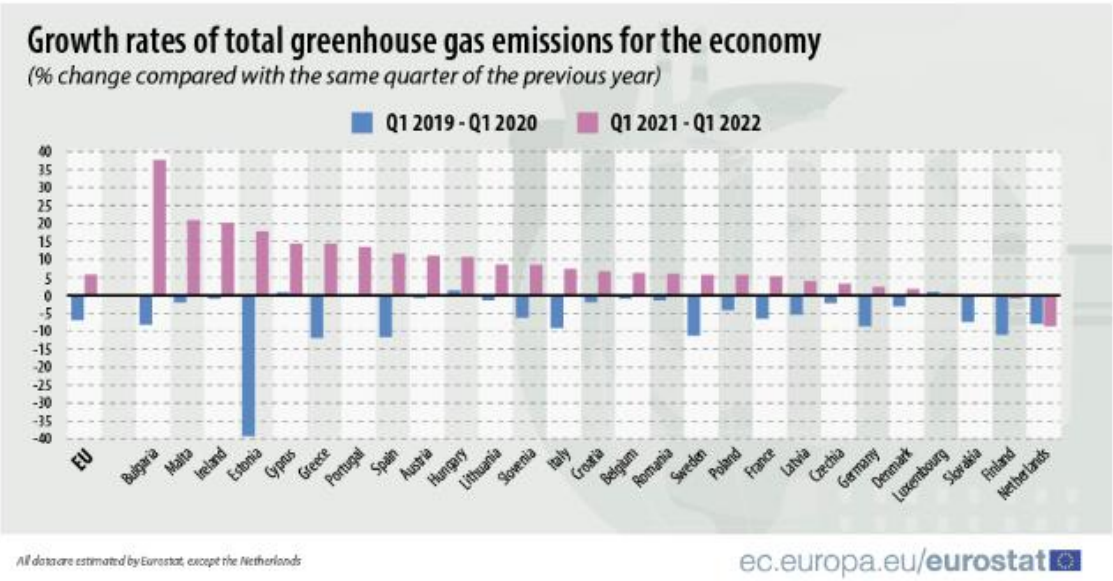


Interestingly the article lists both Ryanair and Aer Lingus among the fastest growing airline polluters in 2019:



6.6 EuroStat – Growth of GHG Emissions

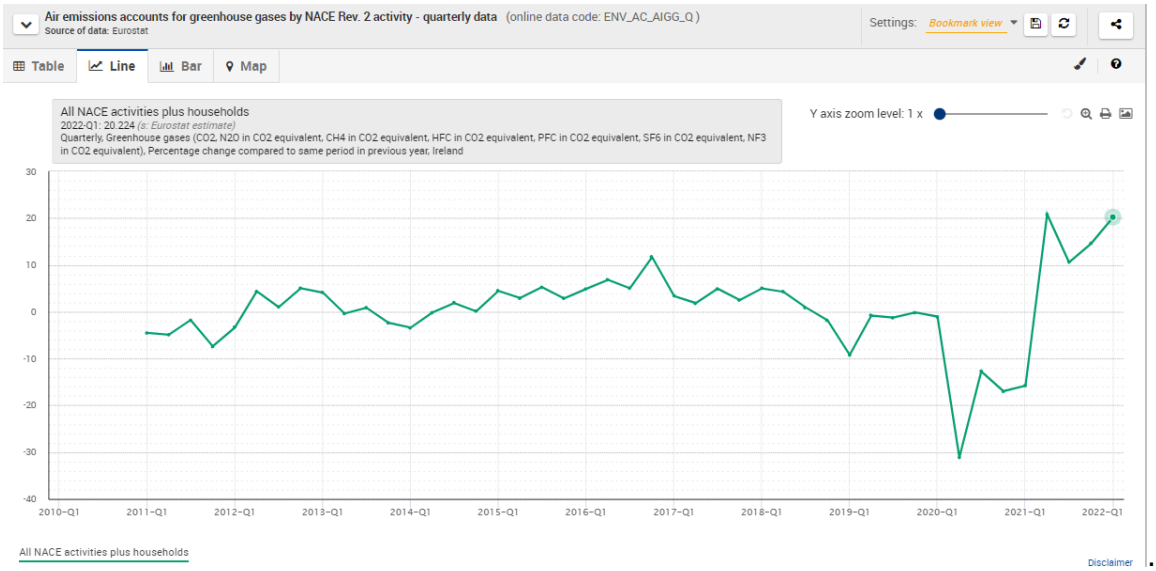
EuroStat has reported that GHG emissions have risen in Q1 of 2022 compared to the same quarter in 2021 (https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220816-1):



It states:

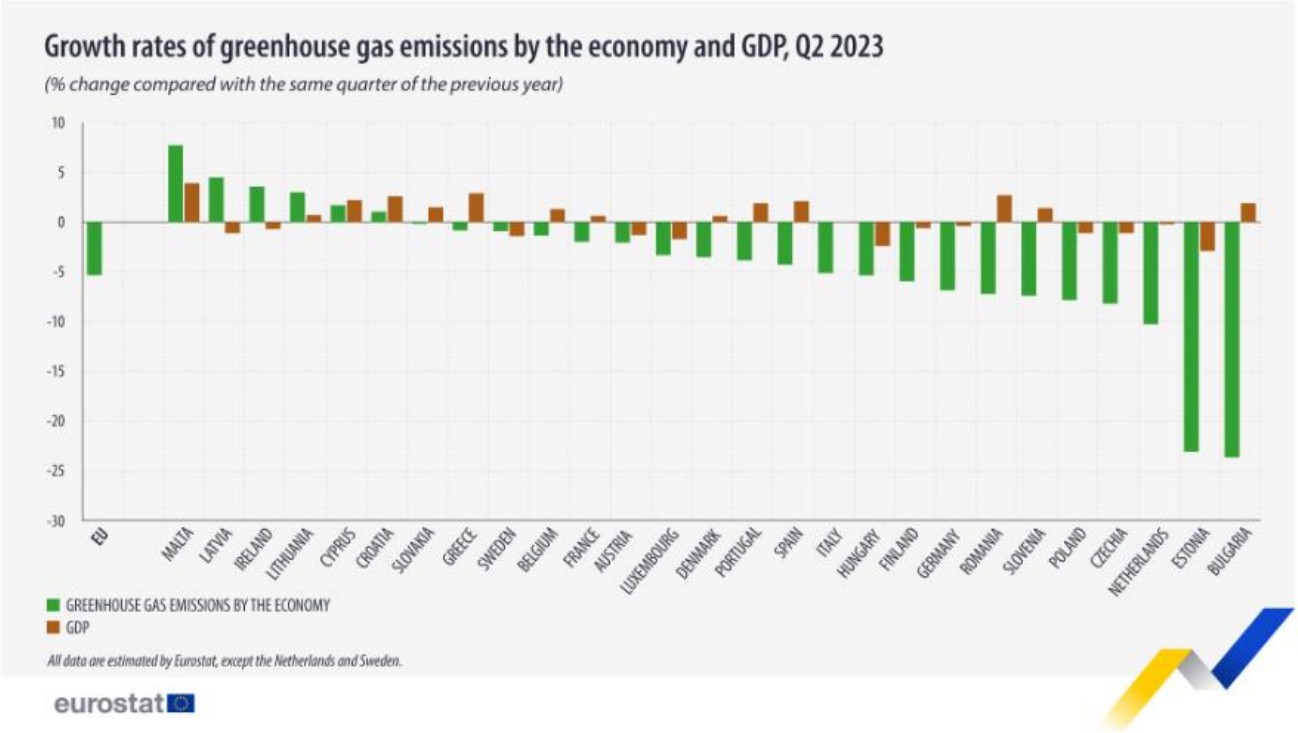
"*Among the Member States with increased emissions in the same comparison period were Bulgaria (+38%), Malta (+21%) and* ***Ireland (+20%)***".

Ireland is singled out with the 3rd biggest increase with a 20% increase:



In an updated report from Eurostat on November 15th 2023, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220816-1 EU economy GHG emissions fell by -5.3% in Q2 2023.

Ireland is named alongside Malta, Latvia, Lithuania, Cyprus and Croatia as the only EU countries that had an increase in emissions. Ireland registered a +3.6% increase.



In a related article in the Examiner, https://www.irishexaminer.com/business/economy/arid-41270623.html, it highlights how this rise in emissions shines light on Irish airlines. The article states:

> *"Speaking to the Irish Examiner, a spokesperson for Eurostat said that while national breakdowns are not published, "emissions from transport indeed contribute to the overall emissions, in particular in countries with large resident airlines," highlighting emissions from Ryanair, Europe's largest airline, as well as Aer Lingus - which are both registered in Ireland."*

6.7 Chatham House Report

A Chatham House Report titled 'Net Zero and the role of the aviation industry' dated November 15th, https://www.chathamhouse.org/2023/11/net-zero-and-role-aviation-industry, focuses on the struggles of the aviation industry to reduce its carbon emissions in line with the Paris Agreement and net zero.

The report highlights the supply-side issues on lack of scale for viable alternatives stating they are still in the R&D phase. The report attempts to assess how managing demand for flights can help set the industry on the net zero trajectory. The model developed demonstrates that acting prudently, and reducing demand for flights in the short term, would offer the best chance of enabling the sector to play its role in achieving net zero.

6.8 OurWorldInData Per Capita CO2 Emissions

Ireland ranked 8th worst in the world on per capita CO2 emissions from International Aviation



Per capita CO_2 emissions from international aviation, 2018

Our World in Data

International aviation emissions are here allocated to the country of departure of each flight.

Table | Map | Chart

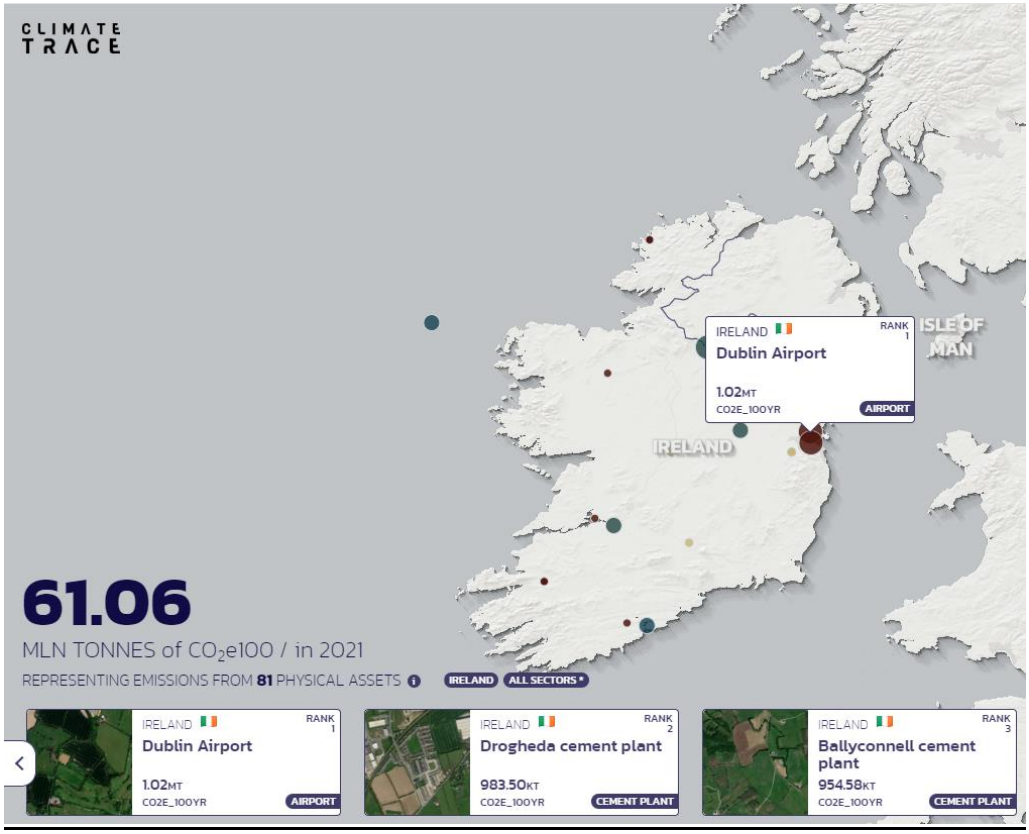
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Per capita CO_2 emissions from international aviation kilograms

Country/area	↑ 2018
Iceland	3,505.6 kg
Qatar	2,472.7 kg
United Arab Emirates	2,195.1 kg
Singapore	1,741.0 kg
Malta	991.6 kg
New Zealand	640.3 kg
Mauritius	599.8 kg
Ireland	574.1 kg
Switzerland	513.3 kg

6.9 Climate Trace

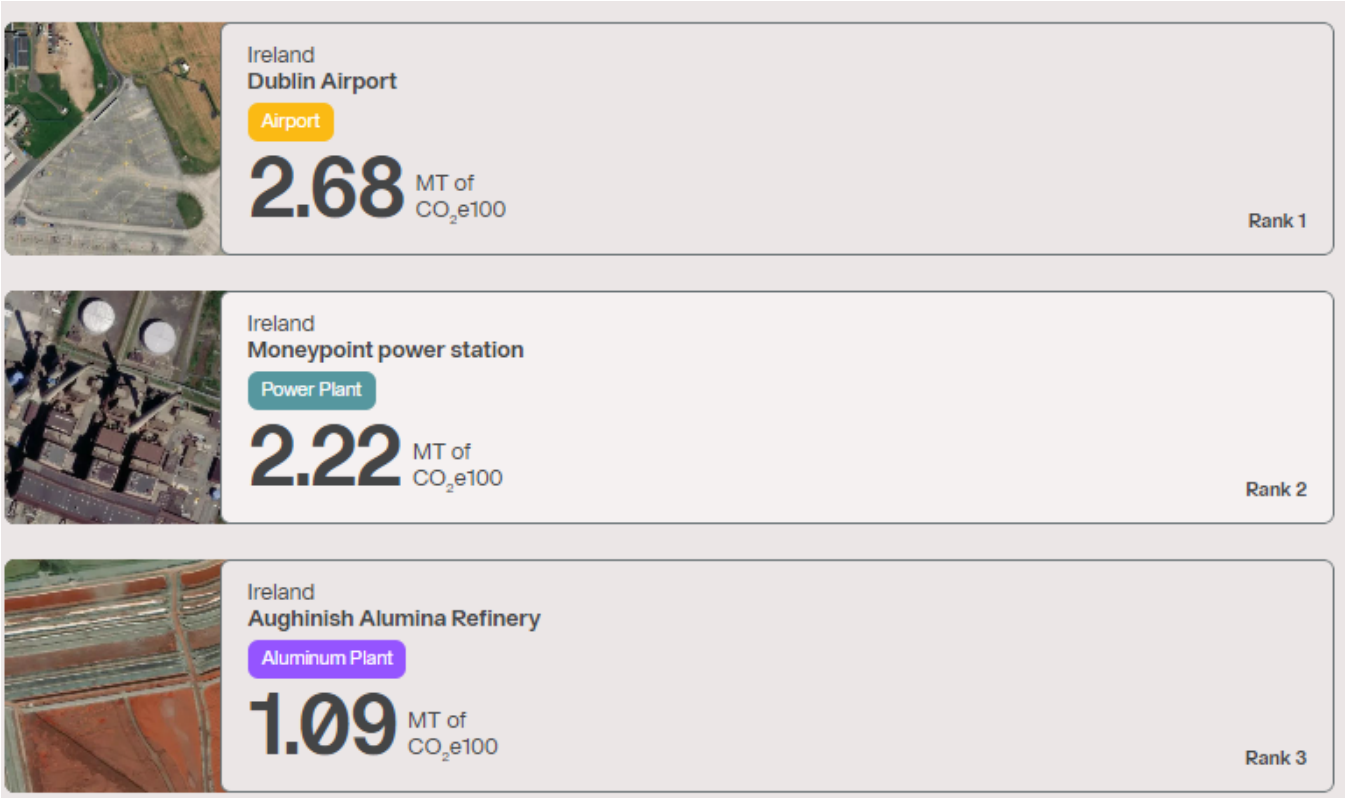
At COP27, Climate Trace (https://climatetrace.org/), a non-profit organisation provided data on the largest Green House Gas (GHG) emitters among a wide selection of countries including Ireland. It showed that Dublin Airport was the largest GHG emitter in Ireland, emitting an estimated 1.02MT CO2e100.



At COP28, Dublin Airport is once again ranked as Ireland's #1 GHG emitter.

https://climatetrace.org/explore/co2e100-2022-ireland-irl

Disturbingly the emissions for 2022 are estimated at 2.68 MT of CO2e100.



This puts the Climate Chapter in the revised EIAR Supplement into perspective and provides unequivocal proof that the GHG emissions from Dublin Airport are '**significant'**.

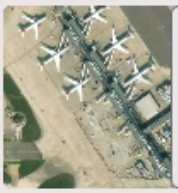
According to ClimateTrace,org, Ireland had 76.42 MT of CO2e100 in 2022. Therefore, Dublin Airport accounted for 3.5% of all GHG emissions in the country in 2022.

According to ClimateTrace,org, Ireland had 15.79 MT of CO2e100 due to the Transport sector in 2022. Therefore, Dublin Airport accounted for 17% of all Transport GHG emissions in the country in 2022.

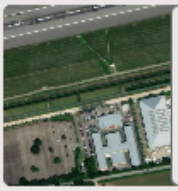
Total aviation GHG emissions were estimated at 2.97 MT CO2e100 in the whole of Ireland. Therefore, Dublin Airport accounted for 90% of the total aviation GHG emissions in Ireland.

Note these figures do not include non-CO2 warming effects.

In a comparison with UK airports, Dublin ranked 3rd, ahead of Manchester and Stansted with only Heathrow and Gatwick with higher emissions:



UK
London Heathrow Airport
Airport
15.91 MT of CO_2e100
Rank 1



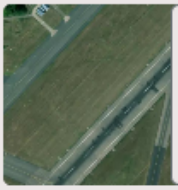
UK
London Gatwick Airport
Airport
3.08 MT of CO_2e100
Rank 2



Ireland
Dublin Airport
Airport
2.68 MT of CO_2e100
Rank 3



UK
Manchester Airport
Airport
2.57 MT of CO_2e100
Rank 4



UK
London Stansted Airport
Airport
1.71 MT of CO_2e100
Rank 5

6.10 Conclusion

The chapter on Climate and Carbon in the EIAR is seriously flawed when assessing the significance of GHG emissions. The latest IEMA guidelines clearly demonstrate that the additional GHG emissions from the additional aircraft movements from the Relevant Action will lead to a significance of '***major adverse'*** as these emissions do not follow the net zero trajectory.

The omission of realistic future years scenarios demonstrates a serious flaw in the Climate and Carbon chapter. It is Government Policy to increase passenger numbers and the daa itself has publicly stated that they will submit a 40mppa planning application before the end of 2023 and have launched a portal to showcase it, https://dublinairport.exhibition.app/. Failure to include future years without the 32m passenger cap is contrary to EIAR legislation and guidelines.

The daa have failed to properly quantify GHG future emissions and failed to assign the significance as '**major adverse'** as per IEMA guidelines.

The daa and Fingal County Council have also failed to take account of non-CO_2 effects on Climate Change and achieving the net zero target.

7.0 Noise Abatement Objective (NAO)

7.0 What Has Changed

This is a new chapter that focuses on the breach of the NAO in 2022 which was published by ANCA on their website. It highlights the populations exposed to >55dB Lnight and how ANCA has failed to react to help alleviate the serious health impacts as identified by the who. This chapter also looks at the choice of baseline year for the NAO and how it doesn't align with the EU Action Plan 'Towards a Zero Pollution for Air, Water and Soil'. And finally, the chapter compares the new EIAR versus the old 2021 EIAR with regard to the population exposed to >55dB Lnight. An Bord Pleanála has the powers to modify the NAO and we urge that this is given a thorough evaluation.

7.1 Powers to Amend The NAO

Under Section 10(4)(a) of the Aircraft Noise (Dublin Airport) Regulation Act 2019, the Board assumes the powers of ANCA in relation to section 9(1)-(3). Section 9(2)(a) states that:

> ***(a) the noise abatement objective is, as appropriate, defined, restated or amended, taking into account, as appropriate, Article 8 of, and Annex V to, the Environmental Noise Directive;***

Therefore, the Board has the powers to amend the NAO. In the following paragraphs it is outlined how ANCA selected a baseline year of 2019 for their NAO, and notwithstanding this, Dublin Airport still failed the NAO in 2022. ANCA should adopt the baseline reference year of 2017 in line with the EU's Zero Pollution Action Plan.

The NAO installed by the Aircraft Noise Competent Authority (ANCA) can be located on ANCA's website at:

https://www.fingal.ie/sites/default/files/2023-08/Noise%20Abatement%20Objective%20for%20Dublin%20Airport.pdf

The main criteria defined in the NAO are:

> *The number of people highly sleep disturbed and highly annoyed shall reduce so that compared to conditions in 2019:*
>
> - *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 and;*
> - *The number of people exposed to aircraft noise above 55 dB Lnight and 65 dB Lden shall be reduced compared to 2019.*

It also states that:

> "*Monitoring of the NAO will be informed by annual reports which will be reviewed by ANCA as part of its obligations under the Aircraft Noise (Dublin Airport) Regulation Act 2019*."

Mitigation Effectiveness Review Report:

ANCA published a report on their website titled '*A review of the effectiveness of noise mitigation measures at Dublin Airport for the year 2022 on achieving the noise abatement objective'*, dated July 27th 2023:

https://www.fingal.ie/sites/default/files/2023-08/Noise%20mitigation%20effectiveness%20review%20report%20for%202022.pdf

This annual report on the effectiveness of mitigation measures to achieve the NAO is mandated through section 21(2) of the Aircraft Noise Bill.:

> *(2) Subject to subsections (3) and (4), the competent authority shall, on or before each anniversary of the date of commencement of this section, review the effectiveness of the noise mitigation measures and operating restrictions (if any) on achieving the noise abatement objective.*

The Aircraft Noise (Dublin Airport) Regulation Act 2019 also allows for a member of the public, upon whom there is a noise impact, request ANCA to review the effectiveness of the noise mitigation measures and operating restrictions on achieving the NAO.

> *(3) (a) The airport authority, or a person upon whom there is a noise impact from the airport, may, by notice in writing given to the competent authority, request the competent authority to review the effectiveness of the noise mitigation measures and operating restrictions (if any) on achieving the noise abatement objective.*
>
> *(b) The competent authority shall, as soon as is practicable after it receives a request under paragraph (a), respond in writing to the requester.*
>
> *(c) The competent authority may, at its discretion, comply with a request under paragraph (a).*

Unfortunately to date ANCA has refused any request from the public under section 21(3)(a) and have relied on 21(3)(c) to refuse such requests. This is totally contrary to the legislators in the Oireachtas when the Bill was passed and therefore there is no agency available to monitor the effectiveness of noise mitigation measures from Dublin Airport which is not acceptable.

On page 5 of the mitigation effectiveness report an introduction to the NAO is given:

> "*In 2022, ANCA defined a Noise Abatement Objective (NAO) for Dublin Airport. An NAO is a policy for managing the effects of aircraft noise emissions on the surrounding communities and environment at an airport. It is a plan to ensure that any growth at the airport occurs in the most sustainable manner possible. The NAO for Dublin Airport was defined by ANCA to ensure that aircraft noise is considered as part of the sustainable development of the airport. It has a clear policy objective set against measurable criteria and outcomes*."

The defining of a NAO is a requirement of EU598/2014 and it's clear from the above statement that ANCA consider the adherence to the NAO is a key sustainable development metric.

On page 7 of the report ANCA present the metrics 55 dB Lnight and 65 dB Lden which is aimed at identifying the population exposed to serious harmful effects of aircraft noise:

- *55 dB Lnight (a level of night-time noise exposure described by the WHO as representing a clear risk to health)*
- *65 dB Lden (where a large proportion of those living around Dublin Airport can be considered highly annoyed)*

For these two metrics, the expected outcomes to be achieved by the NAO are listed on page 8:

- *The number of people highly sleep disturbed and highly annoyed in 2040 shall reduce by 50% compared to 2019 and;*
- *The number of people exposed to aircraft noise above 55 dB Lnight and 65 dB Lden shall be reduced compared to 2019.*

Page 14 of the report lists the number of aircraft movements in 2022 compared to 2019.

In 2022 there were 210,490 movements compared to 238,002 in 2019. Fig 5 is very interesting as it shows that there were more nighttime flights in 2022 compared to 2019:

2022 nighttime flights: 31,284

2019 nighttime flights: 29,320

Therefore, there were 1,964 more nighttime flights (7%) in 2022 compared to 2019. This is very revealing considering that there were fewer overall movements in 2022 compared to

2019. This highlights that Dublin Airport has specifically targeted the nighttime period to increase flights. This is extraordinary considering that Condition 5 of the 2007 Planning Permission (F04A/1755) for the North Runway states that no more than 65 flights at night can be handled at the airport once the new North Runway became operational:

> 5. On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007.
>
> **Reason:** To control the frequency of night flights at the airport so as to protect residential amenity having regard to the information submitted concerning future night time use of the existing parallel runway.

31,284 movements equate to an annual average of 85 nighttime flights per night. Dublin Airport has had 15 years to prepare for the opening of the North Runway and adherence to Condition 5. Therefore, the deliberate rise in nighttime flights in 2022 shows the intent of the daa to blatantly ignore the planning conditions imposed by An Bord Pleanála.

The result is the escalation of noise in the communities surrounding Dublin Airport.

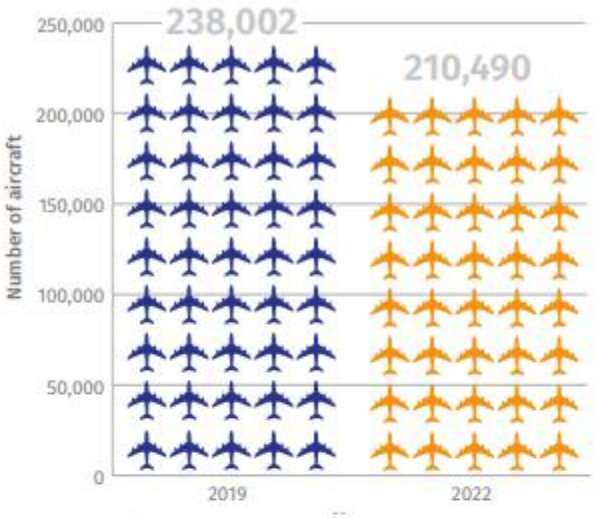


Figure 2(a) – Annual aircraft movements by year

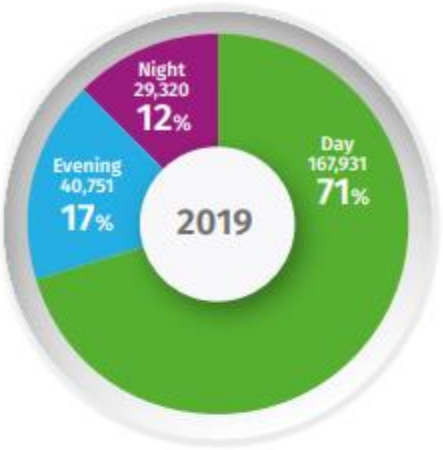


Figure 3 – 2019 Annual aircraft movements by period of the day

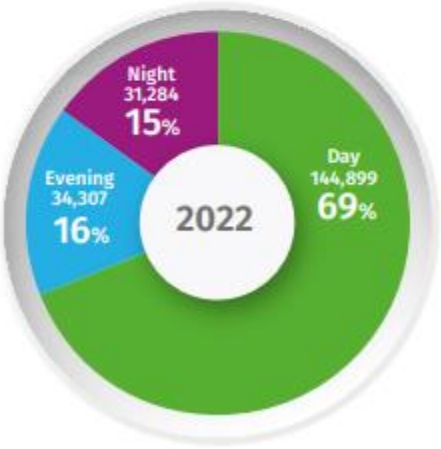


Figure 4 – 2022 Annual aircraft movements by period of the day

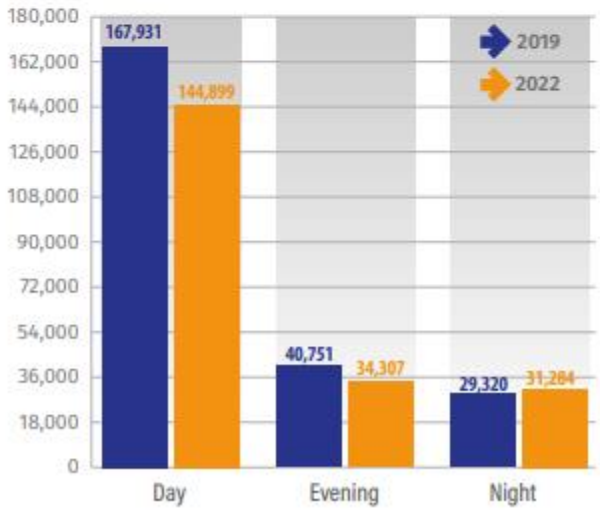


Figure 5 – Annual Aircraft Movements by year

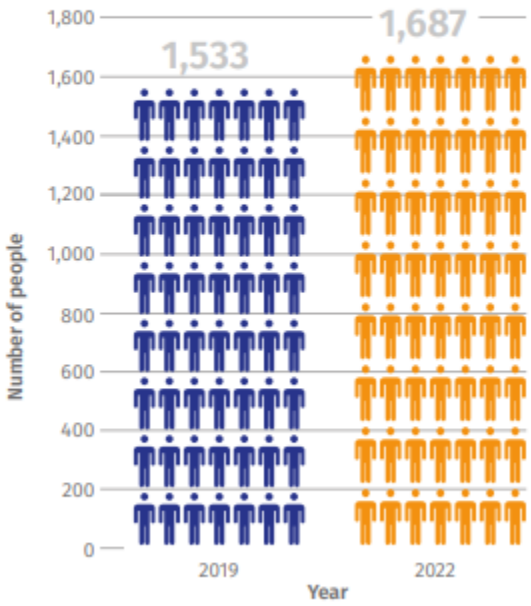
On page 21 of the report the Lnight figures in excess of 55 dB Lnight are presented. In 2022, 1,687 people were exposed to > 55 dB Lnight compared to 1,533 exposed in 2019.

Therefore, 154 more people were exposed to > 55 dB Lnight which is a 10% increase. This is a clear breach of the NAO.

This happened in the first year of operation of the North Runway.

The night-time NAO priority indicator

The fourth indicator of the NAO has regard to the total number of people exposed above the NAO priority level of 55dB L_{night}.



These overall figures must also be examined at the level of individual noise bands to facilitate the identification of targeted measures where necessary.

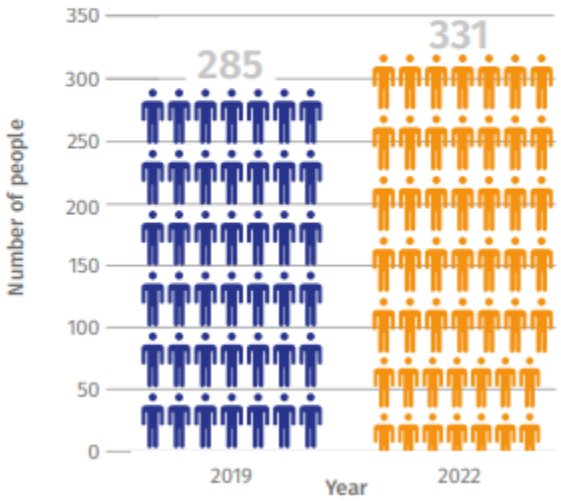
Figure 12 – Number of people exposed to aircraft noise above 55dB $_{Lnight}$

On page 23 of the report the Lden figures in excess of 65 dB Lden are presented. In 2022, 331 people were exposed to > 65 dB Lden compared to 285 exposed in 2019.

Therefore, 46 more people were exposed to > 65 dB Lden which is a 16% increase. This is a clear breach of the NAO.

The day-evening-night NAO priority indicator

The fourth indicator of the NAO has regard to the total number of people exposed above the NAO priority levels of 65dB L_{den}.



These overall figures must also be examined at the level of individual noise bands to facilitate the identification of targeted measures where necessary.

Figure 16 – Number of people exposed to aircraft noise above 65dB L_{den}

In section 5 of the report, it acknowledges that the NAO criteria of 55 dB Lnight and 65 Lden both increased in 2022 breaching the NAO. It also highlights that:

> "*Although the overall number of aircraft movements was lower in 2022 than 2019, the night-time movements increased by 1,964 (7%).*"

Figure 18 on page 26 visualises where the additional houses are that were newly exposed to > 55 dB Lnight in 2022 and who have not been provided by insulation to date.

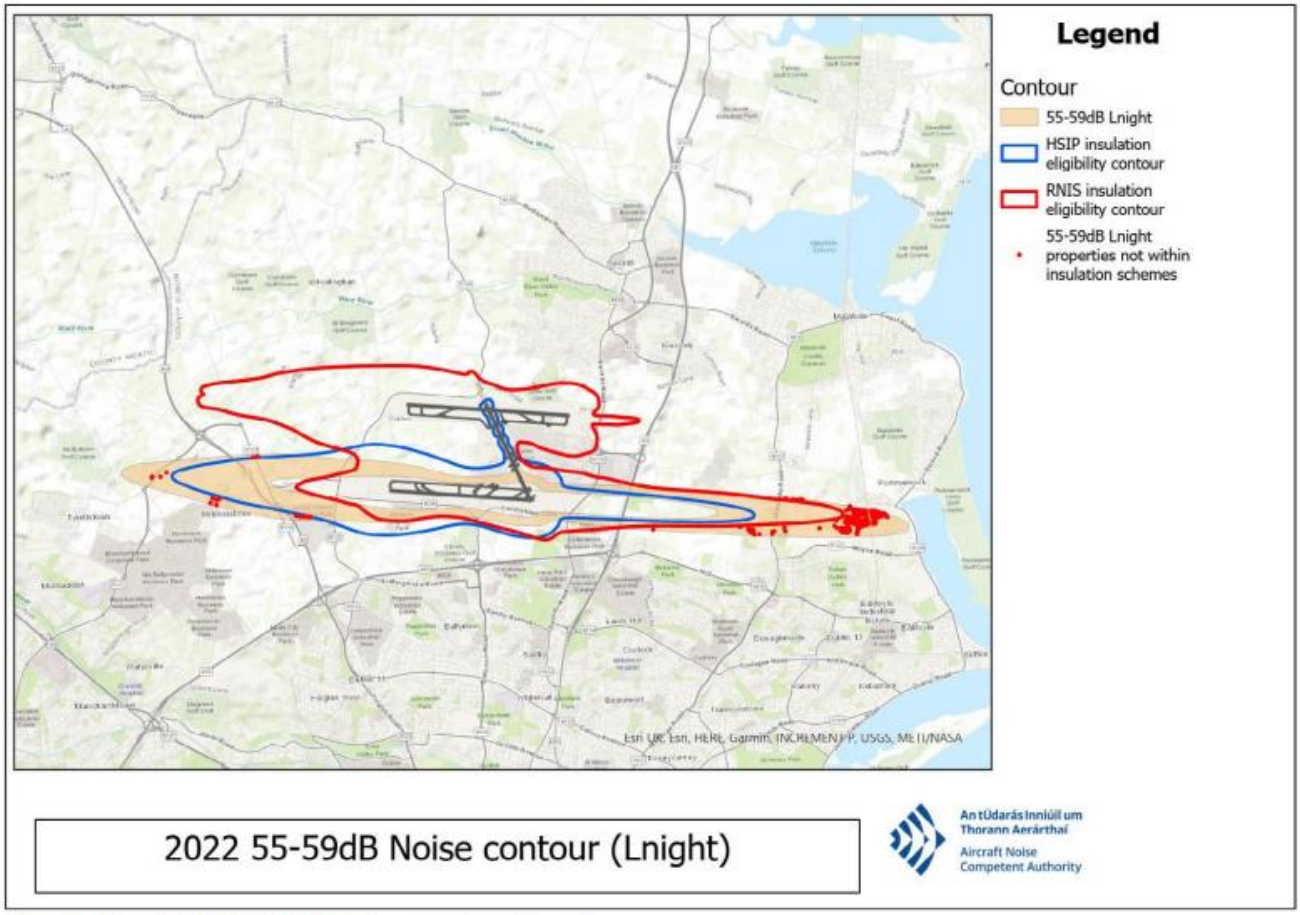


Figure 18 – 2022 55-59dB noise contour (L_{night})

On ANCA's website, an interactive map facility is available to visualise the insulation schemes and contour maps for various years:

https://fingalcoco.maps.arcgis.com/apps/instant/basic/index.html?appid=4f351ec95a3849c9945eff67b8ca2f01

Using this map viewer, one can overlay the RNIS and the 2022 Lnight contours and zoom in to highlight the dwellings exposed to > 55 dB Lnight but are not within the RNIS scheme (red line).



What these maps show is that there is a large number of dwellings in Druimnigh Woods and adjacent to Portmarnock Dart Station that were newly exposed to > 55 dB Lnight in 2022. Note the red line is the extent of the Residential Noise Insulation Scheme (RNIS) and therefore it's clear to see that these dwellings lie outside this scheme. Exposure to > 55 dB Lnight is a serious risk to the health of the people affected according to the WHO. It is imperative that these dwellings be removed from these harmful levels of noise. It is worth noting that these dwellings would most likely not be exposed to > 55 dB Lnight if the daa adhered to Condition 5 of An Bord Pleanála planning grant of 2007. Therefore, as a result of a blatant breach of a condition designed to protect residents' health and residential amenity, this population will suffer health consequences.

Section 6 of the report provides a summary. What is very worrying is that ANCA have not understood the gravity of the situation with people exposed to > 55 dB Lnight. ANCA has no health expertise, and it is very apparent that they do not comprehend the health implications that are so clearly established and published by the WHO.

ANCA refer to the fact that new SIDs were introduced in February 2023 and will further affect the noise climate around Dublin Airport. They seem to suggest that this change may impact

the effectiveness of the noise mitigation measures in place for 2023. But what ANCA has failed to grasp is that the changes to the North Runway SIDs have no effect on the population identified in Druimnigh Woods and around Portmarnock Train Station who live under the South Runway. The South Runway has not changed. It is used primarily for arrivals from the East which is approximately 75% of the time due to the wind direction. Another factor to realise is that Dublin Airport only catered for 28.1m passengers in 2022 (https://www.dublinairport.com/latest-news/2023/01/15/dublin-airport-welcomed-28.1-million-passengers-in-2022). The airport is on target to breach its 32m cap in 2023 and handle in excess of 33m passengers. The 32m cap was another condition imposed by An Bord Pleanála that the daa breached in 2019 and will do so again in 2023. Therefore, with the increase in passenger numbers and aircraft movements in 2023 the number of people exposed to > 55 dB Lnight will grow.

Given the likelihood that the number of people exposed to > 55 dB Lnight will increase further in 2023, one would expect that ANCA would immediately declare a '*Noise Problem*' and take action under EU598/2014 and the Aircraft Noise (Dublin Airport) Regulation Act 2019 to remedy it. However, that has not been the case. ANCA have requested all 2023 noise data from the daa and are therefore pushing out a decision until well into 2024. Therefore, the population exposed to > 55 dB Lnight in 2022 will have to wait until 2024 to see if ANCA declares a Noise Problem and carries out a Regulatory Decision.

This is a shocking dereliction of duty and regrettably confirms a significant bias towards the daa at the expense of the health of Fingal residents. It is worth noting what the WHO said in their Night Noise Guidelines for Europe:

Above 55 dB	The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep-disturbed. There is evidence that the risk of cardiovascular disease increases.

We need the Board to be proactive in providing monitoring and assessment criteria in a workable fashion to protect local communities.

7.2 Increase in Nighttime Flights

In Table 41 of the Noise Modelling Report by BAP in the EIAR Supplement, it lists the recent past years of the number of nighttime flights annually and by 92-day Summer period. What is very noticeable is that nighttime flights have been allowed to increase year on year, well above the 65-flight limit of Condition 5 of the 2007 planning permission. Dividing the 92-day Summer figures by 95 to get the nightly value, we get 68 in 2014, 77 in 2015, 85 in 2016, 94 in 2017 and 95 in 2018.

Based on the Reporting Template sent to ANCA, 2019 had 9445 nighttime flights for the 92-day period equating to 102 flights per night.

This shows that the daa purposely increased night-time flights, knowing there was a Condition of planning expecting a limit of 65 when the North Runway opened. By delaying the opening of the North Runway until 2022, it facilitated the daa to grow night-time flights and then use this is a reason to argue for the removal of the 65 limits. Had the North Runway began construction soon after receiving planning permission in 2007 then the 65 night-time flights limit would never have been reached.

Year / Scenario	Night Movements	
	Annual	Summer
2018	27,896	8,755
2018 minus 25%	*20,922*	*6,566*
2017	27,287	8,689
2016	24,753	7,800
2015	22,546	7,073
2014	19,576	6,253

Table 41: Past Night Movements

7.3 Towards a Zero Pollution for Air, Water and Soil

For the NAO, the daa submitted 2018 as the Baseline reference year. ANCA changed the Baseline reference year to 2019. 2019 is significant as it was the noisiest year at Dublin Airport with the highest number of aircraft movements to date. However, in 2019 Dublin Airport breached the passenger cap of 32m passengers. Therefore, the noise situation in 2019 was an illegal one. Enforcement proceedings are ongoing with Fingal County Council in relation to the breach in 2019 and also the impending breach, this year in 2023.

In the Appeals submission we allocated a significant section to the choice of NAO Baseline reference year. We showed how ANCA decided not to use 2018 as it wouldn't satisfy the NAO objectives of a reduction of 30%. Data provided by ANCA showed that even using 2019 as the baseline reference year, the number of people exposed to >55dB Lnight in 2030 with population growth due to the daa's proposal (scenario P02) will exceed the 2019 levels. And ANCA's data also showed that when taking future passenger numbers into consideration beyond the 32m cap, that the daa's proposal will fail to reduce the number HSD below 30% by 2030.

We showed extracts from page 23 of ANCA's Consultation Report that showed the true motives behind ANCA's actions:

> "*Different reference points could have been selected in developing the NAO, however the percentage reductions set by ANCA would need to be reconsidered to reflect what is achievable. For example, the percentage reduction outcomes stated in the NAO (i.e., to reduce the number of people HA and HSD by 30% in 2030, by 40% in 2035, and 50% in 2040),* ***cannot be achieved by using the reference year of 2018*** *by many of the runway use and restriction scenarios considered by ANCA.*
>
> *Likewise, setting the fourth outcome required by the NAO (i.e., to reduce the number of people exposed to levels of noise above 55 dB Lnight and 65 dB Lden compared to 2019),* ***if changed to reference against 2018, would also limit*** *detailed consideration of many of the runway use and restriction scenarios considered by ANCA in its analysis.*
>
> *ANCA has determined that the NAO, which has been developed against the 2019 reference situation, will enable the airport to ensure future decreases in noise exposure and associated health outcomes whilst providing operational flexibility*".

ANCA, it appears, set out to find the worst noise situation possible as its baseline year so that it doesn't impact on any future flight activities at Dublin Airport. They can only achieve that by selecting 2019. If they selected 2018 as the daa proposed, then they cannot satisfy the NAO.

A truly independent Noise Regulator would have chosen 2016 as the baseline reference year as the data from Round 3 of the END clearly shows the noise levels spiralling out of control. 2016 also supports the recommendation from the EU Action Plan '*Towards a Zero Pollution for Air, Water and Soil*'.

2016 should be the baseline reference year and ANCA should then adjust their NAO criteria based on this reference year. But it's obvious that ANCA did it the other way around. Select the criteria first and then find the year that fits the agenda.

In 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.

2.26 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. However, the year 2017 is when the data from the 3rd Round of the END was reported. But the data provided by each Member State actually came from **2016**.

ANCA set the same target in their NAO of 30% by 2030 but their reference year is 2019 and not 2016/2017. ANCA's SEA document outlines how the population exposed to > 50dB Lnight had more than doubled from 2016 to 2019 (6600 -> 13838).

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 2016/2017 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 in the Appeals submission indicating the escalating noise figures through the 3 Rounds of the END.

It is also of note 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 allowed by ANCA as an opportunity to grant 2019 as the Baseline reference year.

7.4 Comparison of New EIAR Versus Previous 2021 EIAR: >55dB Lnight

On page 22 of ANCA's consultation report, https://www.fingal.ie/sites/default/files/2022-08/Consultation%20Report%20June%202022.pdf, it discusses the '*Selection of 2019 as the Reference Year in the NAO*'. It states that:

"*ANCA adopted 2019 as the reference point for the NAO outcomes as it represents:*

- *The latest data available to ANCA for the Airport at the time the NAO was developed; and*
- *The year in which noise outcomes from the Airport were at their peak with respect to the population exposed to aircraft noise*".

The first comment is a remarkable comment to make. ANCA can request the daa to provide any data it requires under the Aircraft Noise Bill. It therefore could have got access to 2020 and 2021 datasets.

The second comment is also an extraordinary comment as ANCA have deliberately chosen to select the noisiest year on record as their baseline. It was also a year in which the daa breached the 32m passenger cap and unlawfully handled 32.9m passengers.

Under the 3rd Round of the END presented in the Noise Action Plan for Dublin Airport, it used data from 2016. This data clearly showed an escalating noise problem at Dublin Airport. Fingal County Council failed to address this and allowed the noise to escalate to 2019 levels.

The following paragraph shows that ANCA were not willing to be restrictive on the daa's operations and so used the worst year on record to facilitate the daa's operation:

> *"With regard to the use of 2016 as the reference year when setting the NAO, ANCA's analysis indicated that to limit and reduce the long-term adverse effects of aircraft night time noise (while allowing the sustainable development of the airport), setting the NAO with reference to the 2016 situation may be overly restrictive with regard to wider local, regional and national policy relating to the growth of the airport and the forecasts provided with the Application."*

ANCA state that the EU Action Plan '*Towards a Zero Pollution for Air, Water and Soil*' references 2017 as the baseline year but that the data was based on 2016 data provided in Round 3 of the Environmental Noise Directive (END).

ANCA make reference to the candidate NAO (cNAO) put forward by the daa. In pre-planning material on Fingal's Planning website for application F20A/0668, there's clear evidence of

ANCA meeting with the daa to formulate a NAO. This is not how an independent Noise Regulator should act.

ANCA state that the NAO is designed to manage the noise of increasing aircraft activity in a sustainable manner. There is nothing sustainable about selecting a NAO that facilitates an increase in noise levels over the existing permitted planning permission. If noise levels increase from the permitted scenario, then this proves that the NAO is not fit for purpose.

Data from tables 13C-51, 13C-52, 13C-63, 13C-64, 13C-75 and 13C-76 of the newly revised EIAR and data for 2019 from the previous 2021 EIAR are combined together in the tables below to compare > 55 dB Lnight figures and to compare against the 2021 EIAR.

In the new EIAR data, 2025 Proposed is almost twice 2018 levels and just below 2019. However, when you take into account Permitted Developments which have already received planning approval, then 2019 equates to 2358 but 2025 Proposed jumps to 2474 exceeding 2019. And if you further include Zoned Developments then the 2019 figures increase to 4158 but the 2025 Proposed jumps to 6074 and even 2035 Proposed exceeds 2019.

Comparing to the previous EIAR in 2021, the 2025 Proposed totals with growth have almost tripled and the 2035 Proposed have increased by a factor of 9x. This is a remarkable escalation in nighttime noise priority levels.

New Signifcant Information	2018	2019	2025 Permitted	2025 Proposed	2035 Permitted	2035 Proposed
Existing Population >55dB Lnight	753	1533	315	1463	212	1197
Permitted developments >55dB Lnight	197	825	0	1011	0	591
Zoned developments >55dB Lnight	0	1800	0	3600	0	2400
Totals with growth >55dB Lnight	950	4158	315	6074	212	4188

Previous 2021 EIAR	2018	2019	2025 Permitted	2025 Proposed	2035 Permitted	2035 Proposed
Existing Population >55dB Lnight	753	1533	280	1059	203	454
Permitted developments >55dB Lnight	197	825	0	394	0	0
Zoned developments >55dB Lnight	0	1800	0	600	0	0
Totals with growth >55dB Lnight	950	4158	280	2053	203	454

The following paragraphs from page 23 of ANCA's Consultation Report show the true motive behind ANCA's decisions:

> "*Different reference points could have been selected in developing the NAO, however the percentage reductions set by ANCA would need to be reconsidered to reflect what is achievable. For example, the percentage reduction outcomes stated in the NAO (i.e., to reduce the number of people HA and HSD by 30% in 2030, by 40% in 2035, and 50% in 2040), cannot be achieved by using the reference year of 2018 by many of the runway use and restriction scenarios considered by ANCA.*
>
> *Likewise, setting the fourth outcome required by the NAO (i.e., to reduce the number of people exposed to levels of noise above 55 dB Lnight and 65 dB Lden compared to 2019), if changed to reference against 2018, would also limit detailed consideration of many of the runway use and restriction scenarios considered by ANCA in its analysis.*
>
> *ANCA has determined that the NAO, which has been developed against the 2019 reference situation, will enable the airport to ensure future decreases in noise exposure and associated health outcomes whilst providing operational flexibility*".

These statements prove that ANCA did not select the Baseline year of 2018, as proposed by the daa, as 2018 would fail the NAO with regard to the number of people exposed to noise levels greater than 55 dB Lnight. Likewise, the NAO could not be achieved with regard to the reductions in HA and HSD numbers when using 2018 as the Baseline. Therefore, ANCA astonishingly decided to change the Baseline reference year to ensure that the daa's Proposed scenario achieved the NAO as opposed to finding the scenario that best fitted the NAO.

ANCA has consciously set out to find the worst noise situation possible as its Baseline so that it doesn't impact on any future flight activities at Dublin Airport. They thought they could achieve that by selecting 2019. But now we see that they cannot satisfy the NAO by using 2019 or any previous year.

We are of the opinion that a truly independent Noise Regulator would have chosen 2016 as the baseline reference year as the data from Round 3 of the END clearly shows the noise levels spiralling out of control and identified a Noise Problem. 2016 also supports the recommendation from the EU Action Plan '*Towards a Zero Pollution for Air, Water and Soil*'.

An Bord Pleanála have the powers under the Aircraft Noise (Dublin Airport) Regulation Act 2019 to modify the NAO. The NAO should be modified to use 2016 as the baseline reference year for the NAO.

What is beyond doubt based on the new revised EIAR supplement is that Dublin Airport will fail the NAO for the >55dB Lnight criterion when permitted developments are included and also when zoned developments are included. Therefore, the current 2025 Proposed scenario from the daa should be eliminated from consideration.

8.0 EIAR SUPPLEMENT

8.0 What has changed

This is a new chapter that just compares the Proposed and Permitted noise statistics from the revised EIAR Supplement.

8.1 Passenger and ATM Figures

ATMs increased to 240k in 2025 Proposed compared to 236k in previous 2021 EIAR.

ATMS remained at 227k for 2025 Permitted, but passenger numbers increased from 30.4m to 31.8m.

EIAR Supplement:

Table 13-1: Assessment Years, Scenarios, PAX and ATMs

Assessment Years and Scenarios	Predicted Annual Passengers (PAX) (millions per annum)	Permitted vs Proposed Difference in PAX (millions)	Air Traffic Movements (ATMs) ('000s per annum)	Typical 'Busy Day' Night-Time ATMs (23:00-07:00)
2025 Permitted	31.8	n/a	227	60
2025 Proposed	32.0	0.2	240	114
2035 Permitted	32.0	n/a	228	60
2035 Proposed	32.0	0.0	240	114

2021 EIAR

Table 13-1: Assessment Years, Scenarios, PAX and ATMs

Assessment Years and Scenarios	Predicted Annual Passengers (PAX) (millions per annum)	Permitted vs Proposed Difference in PAX (millions)	Air Traffic Movements (ATMs) ('000s per annum)	Typical 'Busy Day' Night-Time ATMs (23:00-07:00)
2022 Permitted	19.6	n/a	166	51
2022 Proposed	21.0	1.4	176	82
2025 Permitted	30.4	n/a	227	60
2025 Proposed	32.0	1.6	236	98
2035 Permitted	32.0	n/a	236	60
2035 Proposed	32.0	0.0	236	98

8.2 2025 Proposed vs Permitted Lnight

Large jump in HSD when consented developments are included.

Table 13-38: Number of people highly sleep disturbed – 2025

Scenario	No. People Highly Sleep Disturbed	
	Excluding Consented Developments	Including Consented Developments
2025 Proposed	23,884	29,589
2025 Permitted	22,281	27,474

The number of people exposed to >55dB Lnight increased from 315 to 1,463 between the Permitted and Proposed scenarios.

9,380 significantly adversely affected, 553 very significantly adversely affected and 176 profoundly affected.

Table 13-39: Air Noise (L_{night}) People by Magnitude of effect – 2025 Proposed vs 2025 Permitted

Magnitude of effect	No. people with Beneficial Effect	No. people with Adverse Effect
Imperceptible	26,207	61,236
Not Significant	9,017	21,046
Slight	47,327	27,977
Moderate	4,561	8,124
Significant	6,404	9,380
Very Significant	20	553
Profound	0	176

No discussion provided as to protect the large number of people significantly adversely affected.

8.3 2035 Proposed vs Permitted Lnight

Large jump in HSD when consented developments are included.

Table 13-48: Number of people highly sleep disturbed – 2035

Scenario	No. People Highly Sleep Disturbed	
	Excluding Consented Developments	Including Consented Developments
2035 Proposed	16,026	21,189
2035 Permitted	9,430	13,592

The number of people exposed to >55dB Lnight increased from 212 to 1,197 between the Permitted and Proposed scenarios.

8,946 significantly adversely affected, 395 very significantly adversely affected and 113 profoundly affected.

Table 13-49: Air Noise (L_{night}) People by Magnitude of effect – 2035 Proposed vs 2035 Permitted

Magnitude of effect	No. people with Beneficial Effect	No. people with Adverse Effect
Imperceptible	4,193	13,723
Not Significant	4,356	38,916
Slight	6,330	21,495
Moderate	4,690	16,235
Significant	185	8,948
Very Significant	0	395
Profound	0	113

No discussion provided as to protect the large number of people significantly adversely affected.

8.4 Residuals Effects

For 2025, the residual effects after adjusting for insulation schemes, 8,970 are significantly adversely affected.

For 2035, 8,301 are significantly adversely affected.

Note these values are for people living in existing dwellings and doesn't cater for consented developments which would be greater.

Table 13-52: 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
2025	7,047	10	371,883	6,414	8,970	206,643
2035	102	0	236,946	94	8,301	111,182

9.0 HEALTH COSTS

9.0 What has changed

This chapter is a revision of parts of chapter 16 in the appeal document. It repeats the Health Burden and DALY Calculation sections but uses the updated Highly Annoyed (HA) and Highly Sleep Disturbed (HSD) values from the revised EIAR Supplement to come to a revised monetary cost.

9.2 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".*

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:

$$N_{x,y} = \sum_j [n_j * AR_{j,x,y}] \text{ (Formula 12)}$$

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.

	%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

The DEFRA report also looked 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.

ABP should also assess productivity losses in Ireland due to aircraft noise.

9.3 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 revised EIAR as part of the ABP further information request and summarized here. As a result of the changes to the number of people Highly Annoyed and Highly Sleep Disturbed, revised health burden calculations have been performed.

Scenario	Total HSD	Total HA
2025 Proposed	23884	53854
2025 Permitted	22281	55041
2018	42260	110238
2019	47045	115738

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	23884	0.07	1672	78500	€ 131,242,580
2025 Permitted	22281	0.07	1560	78500	€ 122,434,095
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	53854	0.02	1077	78500	€ 84,550,780
2025 Permitted	55041	0.02	1101	78500	€ 86,414,370
2018	110238	0.02	2205	78500	€ 173,073,660
2019	115738	0.02	2205	78500	€ 173,073,660

Scenario	Total HSD	DW	Total HSD DALYs	Cost of DALY	Total HSD Cost per year
2025 Proposed	23884	0.07	1672	110987	€ 185,556,946
2025 Permitted	22281	0.07	1560	110987	€ 173,103,094
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 HA Cost per year
2025 Proposed	53854	0.02	1077	110987	€ 119,541,878
2025 Permitted	55041	0.02	1101	110987	€ 122,176,709
2018	110238	0.02	2205	110987	€ 244,699,698
2019	115738	0.02	2315	110987	€ 256,908,268

Scenario	Total HSD	DW	Total HSD DALYs	Cost of DALY	Total HSD Cost per year
2025 Proposed	23884	0.07	1672	70850	€ 118,452,698
2025 Permitted	22281	0.07	1560	70850	€ 110,502,620
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 HA Cost per year
2025 Proposed	53854	0.02	1077	70850	€ 76,311,118
2025 Permitted	55041	0.02	1101	70850	€ 77,993,097
2018	110238	0.02	2205	70850	€ 156,207,246
2019	115738	0.02	2315	70850	€ 164,000,746

9.4 Summary of Different DALY Values

Scenario	Total Yearly Cost HA and HSD (78500)	Total Yearly Cost HA and HSD (70850)	Total Yearly Cost HA and HSD (110987)
2025 Proposed	€ 215,793,360	€ 194,763,816	€ 305,098,824
2025 Permitted	€ 208,848,465	€ 188,495,717	€ 295,279,804
2018	€ 405,292,360	€ 365,795,716	€ 573,021,442
2019	€ 431,585,935	€ 397,320,424	€ 622,405,107

9.5 Health of local residents under EU598/2014

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.

10.0 ADDENDUM TO AA SCREENING REPORT

10.0 What has changed

This chapter is an update to chapter 11 of the appeal document. It uses the revised N60 and N65 figures and contours from the revised EIAR Supplement. It also highlights how the daa have not provided LAmax statistics since December 2020 and are in non-compliance with Condition 10 of the North Runway's planning permission. The chapter also highlights that the revised EIAR Supplement and Appropriate Assessment Screening Report Addendum fails to consider the Red Kite which is an Annex I species and which has been reintroduced to Fingal.

10.1 Addendum

AECOM provided an update to the AA Screening Report previously submitted in September 2021.

Under the heading 'Air traffic forecasts', AECOM state:

> *"latest forecasts show that a passenger throughput of 32mppa is now likely to be achieved in 2024 in the Proposed Scenario and 2026 in the Permitted Scenario"*

Table 1 is presented with the updated forecasts for 2025 and 2035.

Table 1. Air Traffic Forecasts in Assessment Years

	2025		2035	
	mppa	ATM	mppa	ATM
Permitted Scenario	31.8	227	32.0	228
Proposed Scenario	32.0	240	32.0	240

It is incomprehensible to assume that the 32m figure will not be reached in the Permitted Scenario in 2025. The daa have handled 28.8m passengers to the end of October 2023 and are on course to handle over 33m passengers by the end of the year. The evidence to support the passenger numbers has been provided in the chapter related to the Mott McDonald update. Therefore, this update is fundamentally incorrect.

10.2 Literature Review Update

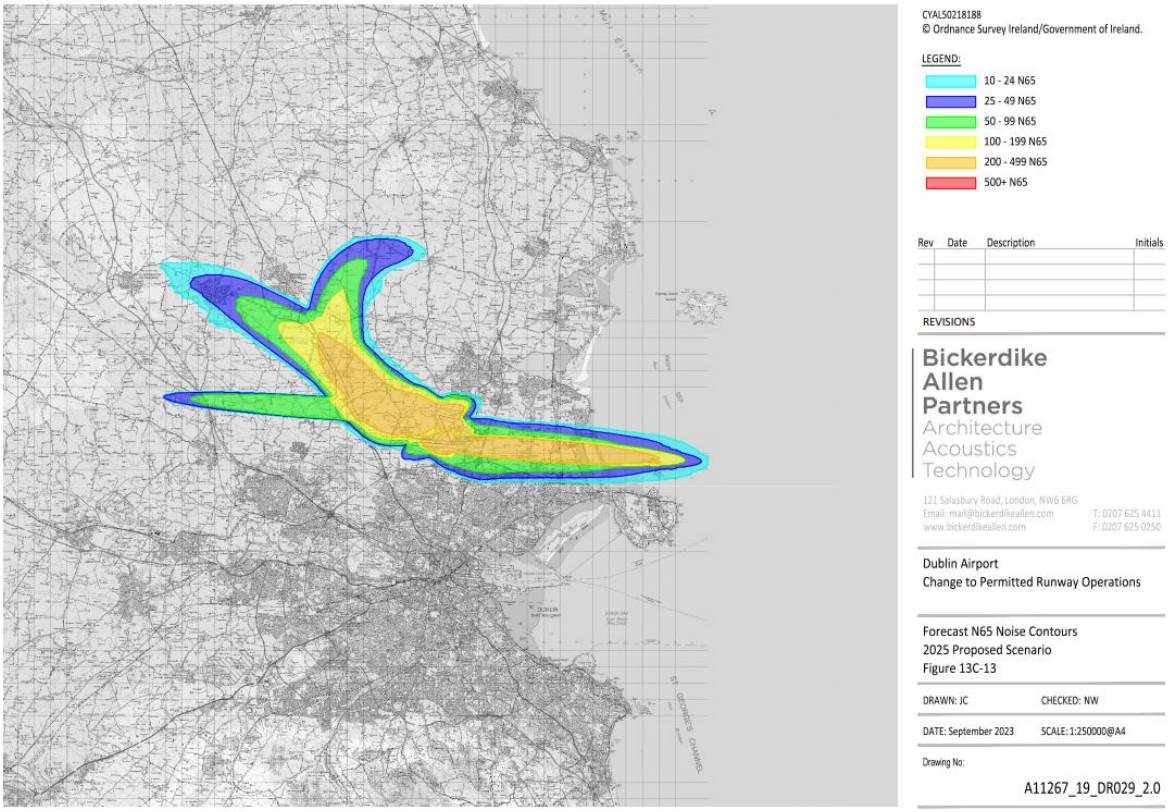
As documented in the appeal submission, the summary of the literature review in the previous AA report from September 2021stated that noise > 60 dB(A) has been shown to elicit disturbance responses in some studies.

The 2025 Proposed N60 contours have been updated in this significant information request.



What is noticeable is that there are now 50+ N60 events extending over SPAs and SACs off the Dublin coast. These events are > 60 dB during the nighttime period. In the previous AA report, there were 25-49 N60 events. AECOM make no reference to the increase in N60 events even though they are aware that such noise levels elicited disturbances in some studies.

Here is the latest update for the N65 contours for 2025 Proposed:



This map shows that there will be between 200 – 499 events > 65 dB during the daytime period.

In the previous report in table 11, data was provided comparing the number of aircraft movements > 60 dB LAmax between Permitted and Proposed scenarios. Unfortunately, AECOM have not provided updated figures based on the new flight paths.

It is also worth noting that the daa have failed to update their quarterly and half yearly noise monitoring reports on their website, https://www.dublinairport.com/corporate/corporate-social-responsibility/noise/airport-noise-noise-reports. The last report was for July – December 2022. These reports provide invaluable data on LAmax statistics at the various monitors. Failure to provide this data is in breach of compliance of Condition 10 of the North Runway's planning permission, F04A/1755. This data would be invaluable in assessing the effects of LAmax noise levels and frequency on the SPAs and SACs.

Note Fingal County Council determined that the submission by the daa for compliance with Condition 10 received on 22-03-2023 is NOT ACCEPTABLE on planning grounds and is NON-COMPLIANT with the requirements of Condition No. 10.

How can ABP adjudicate on this appeal without all the relevant compliance material?

Dear Sir / Madam,

I refer to your submission received on 22-Mar-2023 to comply with Condition no. 10 of Register Reference F04A/1755..

I wish to inform you that your submission is NOT ACCEPTABLE on planning grounds and is NON COMPLIANT with the requirements of Condition No. 10.

2

Reg.. Ref.: F04A/1755/C31/10

REASON:
The information submitted is considered insufficient in order to comply with the requirements of condition no. 10.

Yours faithfully,

for **Senior Executive Officer**

10.3 Red Kite

The Red Kite has been reintroduced to parts of Ireland:

https://www.irishtimes.com/news/environment/red-kite-chicks-bred-in-fingal-for-first-time-in-100-years-1.2780462

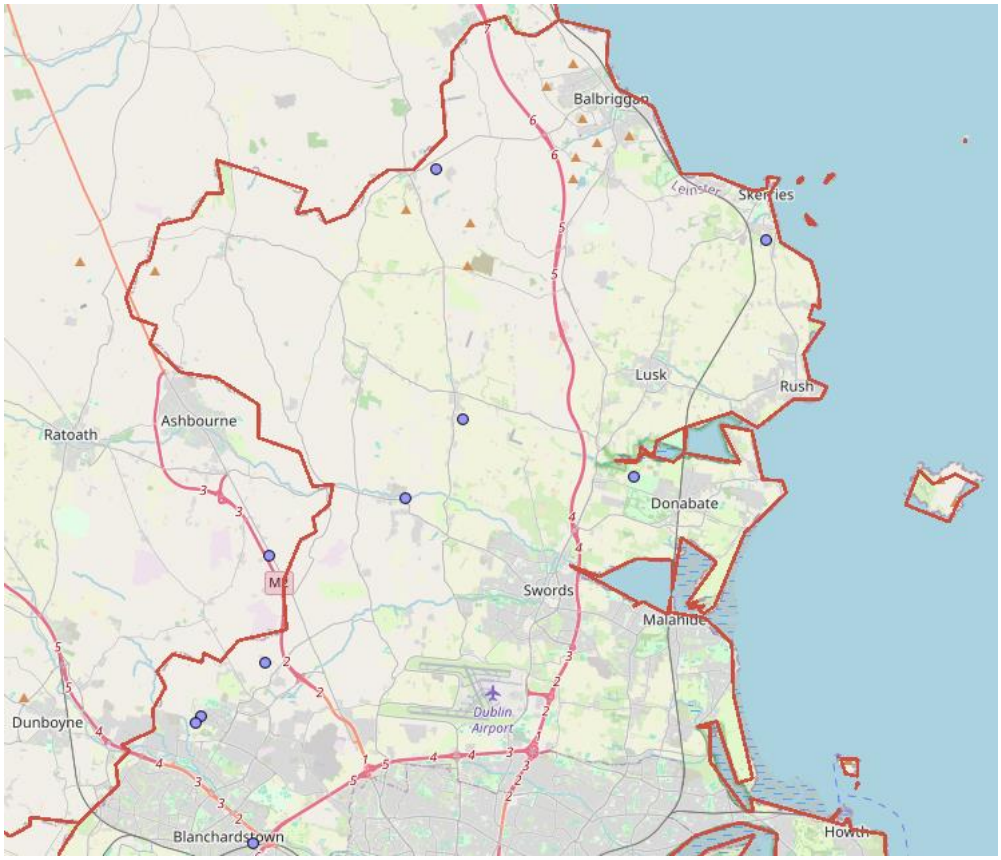
This programme has been led by the Golden Eagle Trust and the NPWS. One of the sites chosen was Newbridge House in Donabate. The Red Kite (Milvus milvus), is a bird of prey listed on Annex 1 of the EU Birds Directive (79/409/EEC) and protected under the Wildlife Act 1976, as amended.

There has been no assessment of the proposed development on the status of the Red Kite which has been reintroduced into Fingal in recent years. The revised AA Screening report addendum makes no reference to the Red Kite which is a serious dereliction of AA requirements.

Below is a map from 2010 showing Red Kite sightings in Fingal:



Here is a map showing the most recent sightings:



This data can be accessed at:

https://maps.biodiversityireland.ie/Map/Terrestrial/Species/11445

and

https://records.biodiversityireland.ie/stats/taxon-stats

The difference in Red Kite sightings is clear to see.

An Bord Pleanála adjudicated on a Strategic Housing Development, ABP-306182-20, where references were made to the Red Kite in the submission by Fingal County Council. In summarising the Chief Executive's Report, the Inspector states:

https://www.pleanala.ie/anbordpleanala/media/abp/cases/reports/306/r306182.pdf?r=388447327107

> *"Concerns are expressed at the potential loss of trees. In addition, the loss of trees will lead to a reduction in habitat for the Red Kite, which are known to nest in area.*"

And in the conclusion:

> *"The planning authority recommend that permission is refused for four reasons: proposed development is out of scale when compared to the existing village and contrary to national, regional and local guidance; design is out of character with the RV zoning, the Village Design Framework Plan and objective RF17 of the County Development Plan; the configuration of open space is poorly designed and the loss of trees and hedgerows is excessive;* ***the impact of the development to the Red Kite (an Annex 1 species)*** *and impact on known bat roosts due to the loss of trees and hedgerows is contrary to Development Plan conservation objectives."*

It is worth highlighting that the applicant in this case prepared a 'Red Kite Impact Assessment' as an addendum to the Ecological Impact Assessment.

Of particular note also is that Article 4(4) of the EU Birds Directive (Directive 2009/147/EC) requires that even outside of SPAs, Member States shall strive to avoid pollution or deterioration of habitats of these birds:

> *"In respect of the protection areas referred to in paragraphs 1 and 2, Member States shall take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the* ***birds, in so far as these would be significant having regard to the objectives of this Article. Outside these protection areas, Member States shall also strive to avoid pollution or deterioration of habitats****."*

There is no reference to the Red Kite in this application which is of serious concern, and no attempt to assess the impact that this development would have on the Red Kite, nor any attempt to avoid a deterioration of their habitat, in clear violation of the Birds Directive.

11.0 SIGNIFICANCE AND MITIGATION

11.0 What has changed

This is a new chapter focusing primarily on 'significance'. It does bring together sections from previous chapters in the appeal document. This chapter introduces a pre-planning document detailing a pre-planning meeting between the daa, ANCA and Fingal County Council. It outlines in great detail how Fingal County Council interpret significance and how consideration should be prioritised on the communities most impact and not on a project level. It outlines how the daa have provided inadequate mitigation and failed to address all populations significantly affected. This chapter provides feedback from the inspector's report on how the daa failed to address significance in during the oral hearing and that the Board had no significance criteria to work with. Also reiterated is the evidence from Mr. Rupert Thornely-Taylor, the Acoustic's expert working for the Board who recommended a refusal based on the noise statistics and lack of significance presented to the Board. This chapter also highlights that because significance was never determined in the original North Runway planning application then the daa cannot state that the "*Permitted*" scenario is acceptable as a baseline significance threshold.

11.1 Significance and EIAR

In an attached ANCA pre-planning document dated October 2nd 2019, ref PPC 106276 (CA 19.01), 'Pre-planning_02-10-20219.pdf', feedback is given on the daa's draft EIS Scoping Report. It states that:

> *"The EIA needs to consider who is impacted and not just the net result. Different options will have different significant impacts on different people."*

This is extremely relevant to the revised EIAR Supplement and prior EIARs from the daa. The EIARs do not consider the population most impacted. The focus is on numbers only. By focusing on the HA and HSD numbers, the contribution of the very low noise contours can have a major impact on these resultant HA and HSD numbers. For example, using tables 13C-51 and 13C-52, the number of people in the 45-49 dB Lden contour band for 2025 Proposed is **215,3998** and the number of people in the 40-44 dB Lnight contour band is **122,141**. These large numbers can skew the HA and HSD numbers and mask the population most impacted by noise at the higher bands. But the advice is very clear, and consideration needs to be given to those most impacted.

Document 02 - Draft EIA Scoping Report

1. The correct terminology should be used throughout, in accordance with the 2019 Act the application is for a *Relevant Action* to be taken, rather than (CTPRO) Change to Permitted Runway Operations.
2. Section 1.3 EIA Scoping should be requested from the Planning Authority rather than the Competent Authority.
3. The interim comments from the Competent Authority will deal with the Noise section only, subject to further legal advice.
4. The term *"Baseline"* should be used in reference to the EIA process and not the EU Regulation 598/2014 process. The 598 process shall use "situation scenarios"
5. It should be clarified in Section 6.6 exactly which sources of aircraft ground operations noise and vibration related to any other aircraft ground operations away from the are to be included.
6. The EIA needs to consider who is impacted and not just the net result. Different options will have different significant impacts on different people.

Further on in the pre-planning document a comparison of the EIA and Balanced Approach assessment is given. It clarifies that the NAO will address the impacts of the proposal at a 'project level' across the whole population whereas the assessment under the EIAR will need to have regard for significance on a community level:

> *"The setting of the NAO will most likely address the impacts of the proposals at a 'project level' i.e. it will consider the impact across the whole population.*

> • *The assessment under EIAR will need to have regard for the significance of the proposals, not just at a project level,* ***but on a community basis****."*

It is very evident from the revised EIAR Supplement that due regard for the communities most significantly impacted is not considered. The communities of St Margarets and The Ward are not singled out for special consideration and therefore the EIAR is deficient.

Under the section 'Metrics for Assessment', it highlights how the NAO will become the noise policy requirement for Dublin Airport and will take precedence over other policy associated with the Airport:

> *"It is however important to note that once an NAO has been set for Dublin Airport, this will effectively become the noise policy requirement for the airport. This will take precedence over other policy from elsewhere and must be shown to be met through the EIA."*

Further commentary on the deficiencies attached to Significance in the scoping report are given:

> *"The scoping report states that the significance of the proposals will be taken in line with Regulation 598/2014. As discussed above, it is debatable whether this is appropriate, as such an approach under the Act only addresses the overall impact of the Airport.*
>
> *-For both air and ground noise, the scoping report does not offer any significance criteria. These will need to be established so that the significance of the proposals can be quantified. It is recommended that first principles such as the metric, threshold values and the use and selection of dose-response relationships are agreed first with the Competent Authority."*

An interesting observation is made by ANCA on the Mott MacDonald report provided in the pre-planning meeting. Reference is made to the 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?"*

ANCA outline how demand could be met by a single runway for up to 160 movements at night:

> *"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 is further proof that ANCA were aware that a single runway at night is sufficient to meet demand for the Relevant Action as it only goes up to 2025. Nothing in the revised Mott MacDonald report as part of the EIAR Supplement changes these assumptions. It is therefore incredulous that ANCA would deem it necessary to remove Condition 3(d) when they clearly knew this was not required.

The pre-planning document refers to the BAP report on the Regulation 598 Assessment. The comments from ANCA are very clear that the runway operations should be contextualised against the communities impacted:

"The scenarios considered within the initial study relate mainly to runway operations which have a consequential effect on the communities that would be overflown at night. It would be essential that each of the runway operations described are contextualised against:

The communities (east / west) that would become overflown at night for the first time;

Whether the form of operation would mean that certain communities would be overflown at night as well as during the day;

Whether the form of operation would mean that certain communities would be overflown at night but not during the day."

Further consideration is given to noise mitigation strategies such as sharing night-time noise between communities and minimising the total number of people affected by night-time noise.

Regarding assessment years and scenarios, ANCA requested the 'Consented' situation which is defined as the 'scenario which describes the impact which was consented at the Oral Hearing taking into account the restrictions of the North Runway consent. This would mean modelling the forecasts and scenarios used at the Oral Hearing'.

As mentioned above the 'Consented' scenario has not formed part of the revised EIAR Supplement.

Interestingly, ANCA state that:

> *"Other noise metrics may be appropriate and may help articulate the effects. These, for example, may include but are not limited to:*
>
> a. ***Additional Awakenings*** *(due to aircraft noise);*
>
> b. ***Nx metrics*** *describing the number of night-time maximum noise level events' and/or*
>
> c. ***Health outcomes****."*

Awakenings have been requested by the Board in this significant information request, but one has to ask why they were not provided beforehand given this guidance at the pre-planning meeting. Also, very little commentary is given by the daa with regard to Nx metrics. And practically no consideration is given regarding Health outcomes.

11.2 Significance in Oral Hearing

Significance was a crucial factor in the Board's noise expert's report, Mr Rupert Thornely-Taylor, and the Board's inspector for recommending a refusal for the North Runway's planning permission in 2007. Significance is also a mandatory requirement under EIA guidelines. Therefore, one would expect that a lot of weight should be attributed to the number of people significantly affected by the development. But that does not appear to be the case in any of the submissions by the daa to date or ANCA's Regulatory decision.

What is also evident is that scenario 01 (keeping Conditions 3(d) and 5) has the lowest number of people > 55 dB Lnight. P01 has been effectively disregarded in this assessment and the focus has been on best alternatives.

In the Inspector's report from the Oral Hearing in 2007, https://archive.pleanala.ie/api/documents/Report/217/R217429.pdf, it makes reference to Mr Thornely-Taylor's evidence on page 39:

> "*However of great import at this juncture is Mr. Thornely-Taylor's view that as the noise section of the EIS fails to describe the likely '**significant'** effects of the project it therefore fails to meet the requirements of the regulations. Undoubtedly noise is a material issue arising in the case and I note that the matter of significance was discussed at the oral hearing with further details sought by way of a section 132 notice consequent to same. Notwithstanding same Mr. Thornely-Taylor's interpretation of the Regulations in terms of the requirements of the EIS document would appear to be correct and the failure to deal with same is certainly a notable omission. As to whether this omission would prejudice the validity of the document is open to question and, as suggested by Mr. Thornely-Taylor, the Board may wish to seek legal advice on this matter*."

Further on, on page 81 of the Inspector's report, it references that Mr Thornely-Taylor noted that:

> *"the original EIS accompanying the application makes sparse use of the word '**significant'**. Clarification was sought from the applicant during the oral hearing on this issue. Mr. Sharps stated that the threshold of significant effects should be assigned to the 63 dB LAeq 16h contour for daytime. I would conclude therefore that the proposed development will therefore result in an extension of the significant effects of day time noise."*

On page 82 the report references Mr Sharps (for the applicant) who stated at the Oral Hearing that because the runway would not be used at night, there would be no significant effects from the development at night.

The Inspector noted that from the noise contours presented, it was quite apparent that there would be a forecast increase in noise at night even though the runway would not be used at night. Therefore, the cumulative impacts of the runway with the existing runways were of particular relevance. As a result:

> "*The applicant was asked to address this matter in the section 132 notice issued by the Board following the oral hearing, in addition to quantifying the potential for increase in night flights on the existing runway which could derive from the growth of air traffic at the airport arising from the proposed runway and clarifying the statement made in paragraph 16.1.2.35 of the EIS which states that a system of assessing the increase in noise level would be used to assess night time noise impact. The notice also requested which category in the accompanying table to which significance should be attached. While the response did make clear that the number of night movements in the modelling period would increase from 45 to 65 in the constrained case (no runway) and from 49 to 95 in the unconstrained case (with runway) the applicant failed to identify the category to which significance should be attached. The applicant stated in response "that it is respectfully submitted that to provide an absolute figure attributable to 'significance' is not equally applicable in all circumstances having particular reference to the background noise". However no data has been provided on such background noise.*

The Inspector agreed with Mr Thornely-Taylor that the section 132 request was not adequately addressed by the applicant and therefore the Board had no clear information on the significance of the proposed development at night. This was further exacerbated by the fact that:

> "*the applicant omitted to submit drawing no. ABP-RFI Q2d which would, most likely, have been the night-time 2025 Option 7b contour with 2nd runway, corresponding to Figure 58, Part 4 of the EIS."*

The Inspector stated that the responses from the applicant couldn't be seen as satisfying the requirements of the Planning and Development Regulations, 2001, in terms of identification of significant effects:

> ***"I am of the opinion that in view of the fact that night time noise constitutes (a) a material concern to many parties to the appeal which the applicant would have been clearly aware of, (b) the fact that it is an important element in the overall assessment of the subject, notably in terms of identifying the significant effects,***

and (c) of the Board's clear and unambiguous request for clarification of this matter by way of the last Section 132 request, the applicant's continuing failure in any meaningful sense to address this matter in clear and unambiguous terms is unacceptable. Therefore, it is my opinion that in the absence of such information, adequate detail is not before the Board on which to make a proper and informed assessment on this matter."

In his conclusion, Mr Thornely-Taylor stated:

"***The EIS does not contain an assessment of significant effects as required by SI 600 of 2001.*** *Evidence about the thresholds of significance was given at the Oral Hearing, and information about significant effects on schools was included in the response to the 9 January 2007 Information Request. It a matter of law whether evidence to the Oral Hearing satisfies a requirement for information to be included in an EIS, and whether responses to Information Requests constitute inclusion in an EIS. If not, it would of course be unlawful to permit the application."*

Mr Thornely-Taylor concluded that:

"***I conclude that the proposed development will result in an extension of the significant effects of noise as indicated by the population counts given."***

In the Board's Direction they stated their reasons for not accepting the Inspector's recommendation to refuse permission:

"the Board considered that adequate information had been submitted in the Environmental Impact Statement, in further information submitted both to the Planning Authority and the Board and at the oral hearing to enable it to make an assessment of the significant impacts of the proposed development on the environment and its acceptability in terms of proper planning and sustainable development. The Board considered that in overall terms, the inconsistencies or deficiencies in information referred to by the Inspector were not so significant as to warrant a refusal of permission or could not otherwise be addressed by way of condition. In particular, the Board was satisfied, on the basis of the information submitted and the conditions attached, and, having regard to the fact that there are no planning restrictions on the current operation of the airport runways, that-

> *(1) there would be no significant deterioration in noise conditions at night time in the vicinity of the airport due to the proposed Option 7b operating mode for the runways* ***(non-use of new runway and of cross runway at night****)* ***and the restriction on night-time aircraft movements by way of condition,***
>
> *(2) in relation to day time noise, there would be some improvements relative to current or future noise impacts with the existing runway system to be offset against disimprovements in other areas/respects and the net effects would not be significant in terms of public health and safety such as to warrant a refusal of permission, and*
>
> *(3) in relation to schools (including pre-school facilities) affected the mitigation measures proposed reinforced by conditions and monitoring can ensure that a suitable noise environment can be maintained within classrooms and school buildings generally."*

It is very clear that the Board allowed permission for the North Runway on the expectation that there would be no significant deterioration in noise conditions at night due to the Board imposing conditions to not use the North Runway at night (Condition 3(d)) and to restrict the number of movements at night on the remaining South Runway (Condition 5). Therefore, the North Runway would not have been granted permission without these conditions as this was the only way to minimise significant effects.

However, in the current Relevant Action proposal, significant effects are still not addressed, and the applicant dismisses the increased significant effects of the Proposed scenario. The Permitted scenario was only acceptable to the Board with the inclusion of Condition 3(d) and 5. The applicant has not shown how the Proposed scenario, with the removal of Conditions 3(d) and 5, can address the question of significance to the satisfaction of Mr Thornely-Taylor and the Inspector in 2007.

11.3 Mitigation

Table 13-2 of the daa's revised EIAR Supplement presents an effects scale for Absolute noise impacts. Table 13-3 presents an effects scale for changes in noise levels. In Table 13-4 the Absolute and change in noise levels are combined into a summary of magnitude of effect. Plugging Lnight figures into the table highlights 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

In section 13.3.1 it states:

> *"A potential significant effect (adverse or beneficial) would be considered to arise if in Table 13-4 the magnitude of the effect was rated as significant or higher."*

The EIAR clearly defines a potential significant effect, yet the daa are only proposing to insulate the populations very significantly affected and profoundly affected (dark red). They are ignoring those significantly affected (light red).

To illustrate this, 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 UK Government proposes to extend the noise insulation beyond 63dB LAeq16 to 60dB LAeq16.

The UK 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, resulting in >54 dB LAeq16 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

The impact of the above proposals would extend insulation to all the significant, highly significant, profound and all people exposed to >55 dB Lnight.

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

The Bap report titled '*Noise Information for the Regulation 598/2014 (Aircraft Noise Regulation) Assessment*' (A11267_12_RP032_3.0) dated November 2020 lists the absolute noise impact criteria:

Table 1: Noise Impact Criteria (absolute) – residential

Scale Description	Annual dB L_{den}	Annual dB L_{night}
Negligible	<45	<40
Very Low	45 – 49.9	40 – 44.9
Low	50 – 54.9	45 – 49.9
Medium	55 – 64.9	50 – 54.9
High	65 – 69.9	55 – 59.9
Very High	≥70	≥60

And in table 2 it lists the relative noise impact criteria:

Scale Description	Change in noise level, dB(A)
Negligible	0 – 0.9
Very Low	1 – 1-9
Low	2 – 2.9
Medium	3 – 5.9
High	6 – 8.9
Very High	≥9

In table 1, >55dB Lnight is ranked as '*High'* and is used for the insulation scheme.

In table 2, '*High'* includes changes in noise levels >6dB(A). Yet the daa only offered to insulate those dwellings exposed to '*Very High'* (>9dB(A)).

ANCA has thus far failed to enforce enough health protection for populations exposed to '*High'* relative levels of noise. The same '*High'* criteria should be used in both circumstances.

Table 3 shows how the absolute and relative impacts are interpreted into magnitude of effect and is taken from the EPA Draft EIAR Guidelines:

Table 3: Summary of magnitude of effect – noise

Absolute Noise Level Rating	*Change in Noise Level Rating*					
	Negligible	*Very Low*	*Low*	*Medium*	*High*	*Very High*
Negligible	Imperceptible	Imperceptible	Imperceptible	Not Significant	Slight	Moderate
Very Low	Imperceptible	Imperceptible	Not Significant	Slight	Moderate	Significant
Low	Imperceptible	Not Significant	Slight	Moderate	Significant	Significant
Medium	Not Significant	Slight	Moderate	Significant	Significant	Very Significant
High	Slight	Moderate	Significant	Significant	Very Significant	Profound
Very High	Moderate	Significant	Significant	Very Significant	Profound	Profound

BAP further state that:

> "*A potential significant effect (adverse or beneficial) would be considered to arise if in Table 3 the magnitude of the effect was rated as* ***significant*** *or* ***high****"*.

The daa have failed to mitigate against '*Significant'* effects as defined by their own acoustic consultant and therefore are in violation of the EPA guidelines.

11.4 Evidence from Mr. Thornely-Taylor at the Oral Hearing

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 the following increases unacceptable:

> **5403->7431** > 57dB LAeq16
>
> **336->439** >63dB LAeq16

From 2007 to 2018/2019, the > 57dB LAeq16 figures increased from

> **5403 > 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.

The revised LAeq16 figures from Tables 13C-53/65/77 of the EIAR Supplement are also listed in the table below for >57 LAeq16 for comparison purposes. This figure includes existing population + permitted developments + zoned developments. The figure of 11141 is far higher than the value of 7431 that Mr. Thornely-Taylor found unacceptable.

Contour	2007	2016	2018	2019	Option 7b (737-800)	2025 Proposed Existing +
LAeq16		(27.9m)	(30.8m)	(32.9m)	2025 High Growth (43m)	Permitted + Zoned
>48	73089				100836	
>51	27450		49108	53278	37855	
>54	10821		23683	24622	14908	
>57	**5403**	5320	**9177**	**9706**	**7431**	**11141**
>60	2892		1998	2158	3967	
>63	**336**	303	257	266	**439**	
>66	174		138	146	216	
>69	60	29	28	28	60	

It is very important to note that Mr. Thornely-Taylor and the Inspector stated that the applicant did not provide sufficient evidence on '*significance'* and on that basis they recommended refusal of the application. As the noise levels have grown beyond what was acceptable to Mr. Thornely-Taylor and the fact that this application is just for a Relevant Action and not a new full planning application, the role of significance is still a major issue to be resolved.

It is also worth highlighting that the High Growth forecast used for the Oral Hearing involved 43m passengers. The Relevant Action is just for 32m passengers, yet the noise levels are far greater.

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 legitimacy of 2018 and 2019 as baseline reference years.

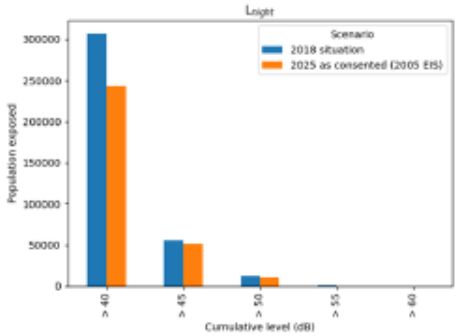
DRAFT

Noise Problem Aspects

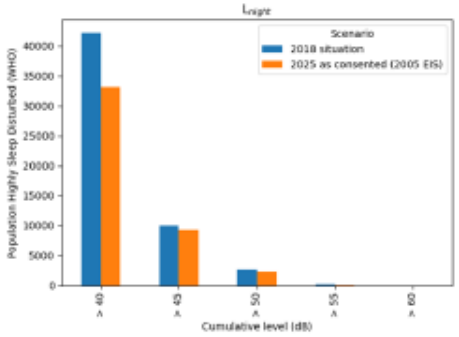
Aspect B – Current L_{night} exposure in excess of consented L_{night} exposure

- 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}



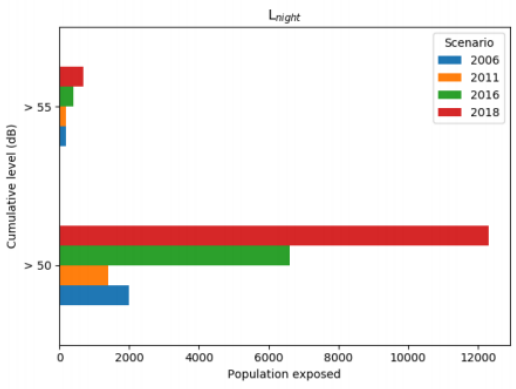
Aspect A below in the ANCA pre-planning document relates to the noise action plans and night-time noise. The graph shows the number of people exposed to >50dB Lnight and >55dB Lnight for the years 2006, 2011 and 2016 which are the reporting years for the 3 rounds of the Environmental Noise Directive (END). 2018 is also included as a comparison. It is evident that night-time noise has increased significantly over time, and this should have been used as a basis for declaring a Noise Problem. ANCA should have used the END data in the Noise Action Plans to declare a Noise Problem when ANCA was first incorporated.

DRAFT

Noise Problem Aspects

Aspect A – Noise Action Plan and Night Noise

- NAP indicated that night noise from the Airport *"may be a problem and may need to be improved"*. This was based on 2016 data.
- The NAP includes actions for daa to report exposure annually. The information provided under pre-planning provides data for 2018 and 2021 – ANCA has since requested 2017 and 2019 data.
- The data shows that night noise exposure has increased several fold since 2006 and would continue to increase. This may be used as a basis of declaring a noise problem.
- This aspect does lend itself to supporting the setting of a NAO.



An tÚdarás Inniúil um Thorann Aerárthaí
Aircraft Noise Competent Authority

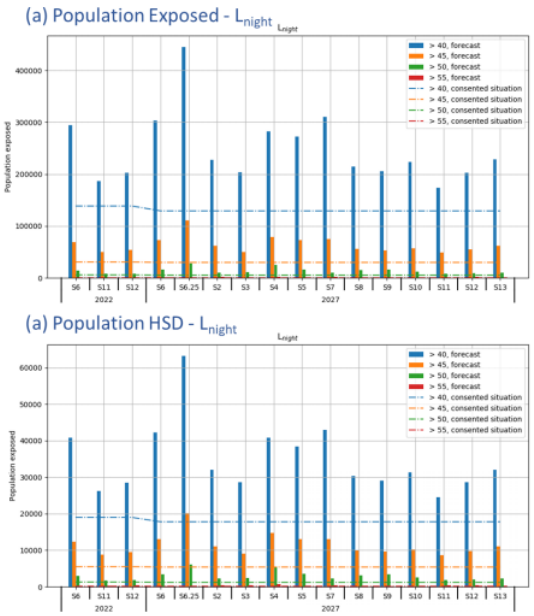
Aspect C in the pre-planning document focuses on the forecast night-time exposure scenarios compared with the consented scenario. The graph shows that all forecast scenarios would result in higher exposure levels compared with the consented scenario from ABP in 2007. It states that:

> ”***This points to significant environmental effects under EIA and as such materiality***”.

Noise Problem Aspects

Aspect C – Forecast noise exposure is higher than the consented situation

- The data provided by daa and their Consultants demonstrates clearly that for most metrics and noise indicators, that scenarios for changes to the North Runway planning consent will result in higher levels of noise exposure than would occur if the consent remained unchanged.
- This points to significant environmental effects under EIA and as such materiality.



In summary any of the three aspects could have been used to declare a Noise Problem in 2019.

What is also very important to note is that the daa included the ‘Consented’ scenario in their original EIAR from 2020 but removed it in subsequent EIARs. It would appear that the daa did not want any comparisons with the scenario in 2004-2007.

11.5 Significance Criteria Assessment within the EIAR Supplement

The daa in their revised EIAR Supplement document use what they call "*Permitted*" Scenarios. They allude to the fact that based on a planning permission granted in 2007 for the North Runway that they use this grant of permission as a sort of baseline for what is the "*Permitted*" noise scenario.

However as stated in their EIAR Supplement introduction there are a number of reasons for submitting the revised EIAR supplement, including that the flight paths have changed for departures off the North Runway from those that were submitted with the original Relevant Action submission to Fingal Co. Co. in December 2020 and from those assessed in the EIS of the 2007 grant of planning by ABP.

Therefore, a whole different population and residences are now affected by these changes to the proposed Relevant Action and therefore the permitted planning scenario is different in terms of significance criteria to this newly affected population. Furthermore, as noted earlier in this section, **Significance Criteria was never assessed in the 2007 permission** and therefore there is no permitted significance criteria.

In the new EIAR supplement the daa compare the population numbers of what they call the "*Permitted scenario*" to the predicted "*Proposed scenario*" WITHOUT actually reviewing the significance criteria on each household associated with their proposal.

To demonstrate this, we refer to Table 13-2 of the EIAR supplement "*Air Noise Impact Criteria(absolute) – Residential*" and note that for Lden ranging between 65 to 69.9 dB the scale description is HIGH. With reference to Table 13-3 for change in noise level greater than 9dB the scale description is VERY HIGH. Taking both of these and reviewing Table 13-4 the magnitude of the effect is "***PROFOUND***", an effect which is categorised in the EPA guidance document on EIAR as being "***an effect that obliterates all sensitive characteristics"***.

We refer to the Noise monitoring that was carried out at Pearse Sutton's family residence at Ballystrahan, St. Margarets and Tersea Sweeney's family residence at Newpark, The Ward which was for the total of the 92-day Summer period for 2023 and also to the noise monitoring reports carried out at their residences PRIOR to the North Runway commencing Operation. Both are experiencing High absolute noise readings and very high relative noise readings putting both in the *"Profound*" effect category. All of the residences at least between these two specific residences are obviously experiencing the same effects and adjacent residents are either Profoundly affected or Very Significantly affected.

This Profound effect applies to all existing housing located under the new divergent flight paths in close proximity to the runway. This is confirmed from the noise monitoring results carried out by us at various locations and which is included elsewhere in this document. However, in table 13-34 it is stated that when comparing the 2025 Proposed to the 2025 Permitted that there are no population exposed to Profound or Very Significant effects. This is completely wrong as the population now exposed to Profound effects were never exposed to Profound effects for the noise contours submitted for the granted 2007 permission, if Significance criteria were assessed, which the DAA did not carry out at the time in contravention of EIS requirements.

The Significance Criteria must be based on the actual significance of each residential unit and assessed and mitigated accordingly. This has not been done and therefore the assessment is deficient and inadequate. Despite this no proper mitigation for these profound effects, which also apply to amenity, are provided.

Then at Section 13.7.13 it is stated that:

> "*Going from the 2025 Permitted Scenario to the 2025 Proposed Scenario, 7060 people are assessed as having a significant beneficial effect and 119 people are assessed as having a significant adverse effect using the criteria detailed in Table 13-4.* ***NO PEOPLE ARE ASSESSED AS HAVING THE HIGHEST EFFECT LEVELS i.e. VERY SIGNIFICANT AND PROFOUND***."

How can a professional team associated with such a major infrastructural aviation project misrepresent the facts of the Significance of the effects on this proposed Relevant Action when it has such devastating effects on the homes and lives of these residents?

Why given that this application was lodged to Fingal County Council in December 2020 and that the runway was opened in August 2022 and that the additional information was submitted to ABP in September 2023, which is a period of operation of the North Runway of 13 months, did the daa and its professional team not carry out on site ACTUAL noise monitoring of this area when they knew that there was a major issue with noise as reported in newspapers, and other media including Prime Time, and by locals since the opening of the runway. This would have clarified the real noise situation and now the daa have been found out by the local community members taking the initiative to carry out noise monitoring. **We consistently**

requested ANCA to carry out independent noise monitoring and they too refused to do so. This is a disgraceful situation which has been allowed to unfold due to the incompetence of the daa, aided and abetted by ANCA who sat on their hands.

Now to continue, and it actually gets worse, at Table 13-39 when comparing the number of people effected for the Lnight situation it is noted that in the 2025 Proposed situation that 176 people are profoundly affected, 553 are Very Significantly affected and 9,380 Significantly affected.

Then skipping onto section 13.8, Mitigation and Monitoring, it is proposed that the "*Very Significantly*" affected people are to get a paltry €20k towards insulating a bedroom whilst "*Profoundly*" affected people get the same.

Again, at Table 13-44 when Lden is compared in 2035 prosed it is noted that there are:

> *"No people are assessed as having the highest effect levels i.e very significant and profound."*

It would appear that the daa and their team are assuming that if people's residences are sound insulated in accordance with their existing Residential Insulation scheme and that even if the proposed effects are deemed to be Profound or Very Significant due to the change in flight paths for daytime noise, that this is an acceptable mitigation measure. There is no mention whatsoever of the mitigation measure of Voluntary Purchase being extended to these categories of Significance.

At section 13.6.25 it is stated:

> "*Although just five dwellings are located in this contour (69 dB LAeq 16h), the Applicant has voluntarily extended participation in the scheme to a further 33 dwellings, thus honouring earlier commitments and having regard to the contours used in the original planning application."*

Many of these houses within the Kilreesk area are also located within the original INNER PUBLIC SAFETY ZONE for straight out departures of the new North runway. But these flight paths have changed as accepted by the daa and now a whole new population are affected by the change. Condition 1 of the existing 2007 planning permission together with the other conditions were put in place by An Board Pleanála because it was recognised at the time that the daa did NOT carry out an assessment of Significance Effects on people being affected and

the Board, instead of giving the daa an embarrassing refusal, decided to protect local residences by putting the mitigation conditions and flight time restrictions in place. The daa have decided to change flight paths and now must deal with the Profoundly and Very Significantly adversely affected people who cannot enjoy their homes and gardens, as the proposal by the daa obliterates all sensitive characteristics associated with the residential amenity.

The only mitigation measure for these people is Voluntary Purchase, or preferably relocation to some other location of the community where the daa provide the same size house on the same size site and take over the existing effected households. This, by the way, in the context of the monetary figures put forward by the daa regarding the requirement for expansion of night flights at Dublin airport is well within the business plan and is the only fair way to deal with the horrific significant effects proposed by the flight paths changes and expansion of night flights.

A further point that is relevant to the above is the issue of Noise Zones as set out at Section 13.6.7. It states that:

> *"Noise zones have been in use for a number of years in the Fingal Development Plan" and reference is made to the Dublin Airport Local Area Plan. It notes that "Since publication of previous noise zones in 2005: and over the past decade (from 2020) further evidence has emerged that has updated understanding of how aircraft noise can effect health and quality of life."*

And:

> *"For these reasons, it was considered appropriate to update the noise zones for Dublin Airport to allow for more effective land use planning for development within airport noise zones."*

The updated noise zones were then included as a variation in the Previous Fingal Development Plan and are also now included in the New Plan.

Prior to 2005 there were no restrictions for local community members based on noise zones. Despite the daa continually saying that they controlled the area around Dublin Airport to prevent local development, they did not, and most housing constructed in The St Margarets The Ward area had no planning conditions attached relating to aircraft noise and MOST DEFINITELY it was never set out that there would be a change to the straight out departure flight paths of the 2007 planning permission. Therefore, on the basis that Dublin Airport urged Fingal County Council to provide noise zones to control planning in the future due to HEALTH and QUALITY OF LIFE, it follows that the imposition of such noise impacts should NOT be imposed on the residents already living in these zones, and that if it is proposed then Significance of Effects MUST be carried out and PROPER mitigation put in place depending on the significance of effect. Anything else is by the daa's own admission a potential health and quality of life issue. Note that the daa advised that no residential development be permitted in Noise Zone A which is the zone that most people are Profoundly and Very Significantly affected by this daa proposal.

This again reinforces the fact that Profound or Significantly affected people cannot be mitigated by house insulation noise alone, as this does not counter against the significance of daytime and nighttime noise as proposed by the change in flight paths and extended night flights.

12.0 HSE ENVIRONMENTAL HEALTH SECTION

12.0 What has changed

This chapter is an update to chapter 15 in the appeal document. It includes additional submissions from various HSE Departments to Fingal County Council and ANCA.

12.1 Submissions

- HSE Department of Public Health submission on 01/02/2021 on initial planning application
- The HSE Environmental Health (EHS) section made a submission, dated 28/01/2021 on the daa's planning application F20A/0668 regarding the removal of night-time flight restrictions at Dublin Airport.
- The HSE EHS also made a formal submission dated September 29th, 2021, on the daa's revised planning application.
- The HSE EHS then made a submission dated February 24th 2022 to the Aircraft Noise Competent Authority's (ANCA) public consultation. It is worth noting that the HSE are not a statutory body for consultation purposes in the ANCA process.
- HSE Public Health Area A Department's submission on December 20th 2022 on the proposed Material Alterations to the Fingal Development Plan

12.2 HSE Dept Of Public Health Submission to Planning Authority

In the HSE Department of Public Health's submission, it highlights that:

- Noise can have negative impacts on human health and well-being.
- Environmental noise is among the top environmental risks to physical and mental health, and is associated with a substantial burden of disease in Europe.
- There is a plethora of evidence that sleep is a biological necessity, and that disturbed sleep is associated with a number of health problems.
- Noise disturbs sleeps by a number of pathways, and even at very low levels of noise, physiological reactions can be measured, such as increased heart rate, body movement and arousals.

It states that the proposed changes to the North Runway Planning Permission may have significant consequences for Public Health in the surrounding areas.

The submission then discusses the impact of lack of sleep on human health. It states that:

- Insufficient sleep and sleep disorders impact daily functioning, mood, cognition and cardiovascular health outcomes such as obesity, high blood pressure, diabetes, stroke and heart attack.
- Prevalence of poor sleep health is high, particularly amongst vulnerable populations such as racial/ethnic minorities and individuals of lower socioeconomic status. Many factors contribute to this high prevalence, including environmental factors.
- Noise has been shown to fragment sleep, reduce sleep continuity and reduce total sleep time.
- It is therefore important to identify and target determinants of sleep health, including environmental factors.
- Continuous exposure to aircraft noise increases the frequency of waking up during sleep and decreases slow-wave sleep (also known as deep sleep).
- The auditory system constantly scans the environment for potential threats, and humans perceive, evaluate and react to environmental sounds even when asleep. During sleep, night noise can be either intermittent (that is discrete noise events rather than constant background noise), or single noise event.
- When noise is accompanied by vibrations the combination of noise and vibration induces higher degrees of sleep disturbance than noise alone and other factors such as situational factors (depth of sleep phase, background noise level) and individual factors (noise sensitivity), contribute to whether or not noise will disturb sleep.

- Repeated noise-induced arousals lead to impaired sleep quality and recuperation, delayed sleep onset and early wakening, less deep and REM sleep, and more time spent awake and in superficial sleep stages.
- Noise may also prevent people from falling asleep again once woken. It is currently unclear how many additional noise- induced awakenings are acceptable and without consequence for sleep and health.
- When sleep is permanently disturbed and it becomes a sleep disorder, it is classified in the International Classification of Sleep Disorders as “environmental sleep disorder”.
- Noise-induced sleep disturbance is an example of an environmental sleep disorder, which is a sleep disorder that causes complaints or either insomnia or daytime fatigue and somnolence. The exact prevalence of environmental sleep disorders is not known.
- It is generally accepted that insufficient sleep and sleep loss has a great influence on metabolic and endocrine functions, as well as on inflammatory markers, and it contributes to cardiovascular risk.
- C-reactive protein, an acute inflammatory marker, a predictor or strokes and heart attacks has been shown to linearly increase with total and/or partial sleep loss.
- Leptin, which is involved in glucose regulation and weight control, decreases with sleep loss thus increasing appetite and predisposing to weight gain, impaired glucose tolerance (risk of diabetes) and impaired host response.
- Sleep loss also effects neurobehavioural function, especially neurocognitive performance.
- Noise also activates the stress response, and long-term noise exposures may lead, in persons liable to be stressed by noise, to permanently increased cortisol concentration above the normal range. Increased risk of cardiovascular disease is connected with stress.
- There is considerable evidence for a relationship between sleep and the immune system, and the immune response may be impacted by environmental noise during sleep.
- Disturbed sleep leads to daytime sleepiness in 40% of affected subjects. As well as the potential health implications, daytime sleepiness interferes with work and social function and can have consequences including cognitive problems, motor vehicle accidents, poor job performance and reduced productivity.
- Time studies have indicated that the average amount of time people are in bed is 7.5 hours; therefore the average sleeping time would be somewhat shorter. There is considerable variation in sleeping time due to factors such as age and genetics.

- **It is therefore recommended that for these reasons, a fixed interval of 8 hours is a minimal choice for night time protection, this protects about 50% of the population. It would take a 10 hour period to protect 80%.**

The submission then cites the WHO Noise Guidelines and lists the potential adverse health outcomes associated with aircraft noise:

- Ischaemic Heart Disease (IHD):
- Hypertension:
- Stroke:
- Children's blood pressure:
- Annoyance:
- Cognitive Impairment:
- Hearing and tinnitus:
- Sleep disturbance:

It cites the WHO report's strong recommendations:

- Reduce noise levels produced by aircraft below 45dB Lden, and reduce night noise levels produced by aircraft to below 40dB Lden, as aircraft noise above this level is associated with adverse effects on sleep.
- To reduce adverse health effects, the group strongly recommends that suitable measures to reduce noise exposure from aircraft in the population exposed to levels above these guideline values are implemented.

With regard to replacing Condition 5 with a Noise Quota, the report states:

> "*This would effectively increase the number of flights taking off and landing between 23.00 and 07.00, and* ***reduce the protected period of time during which flight restrictions exist in current permission****. Sleep is an important biological process for overall health, and noise has been shown to disturb sleep. In addition to sleep disturbance, aircraft noise is associated with a number of adverse health outcomes*.
>
> *Sleep time of 8 hours is thought to protect 50% of the population, therefore reduction of the restricted flight times to a 6 hour window between midnight and 6am may have an adverse effect on health outcomes. Proposed noise mitigation measures are welcomed, however* ***consideration should be given to whether these are sufficient to reduce***

night noise levels to recommended levels, especially in the summer months when air traffic is increased and windows are more likely to be open, modifying insulation effects*.*

*The current WHO recommendation is to reduce noise levels to below 45dB Lden from 55 dB Lden for the hours between 0700 and 2300 and to reduce to below 40db Lnight from 40dB -45dB Lnight for night time hours between 2300 and 0700. This is a factor to consider in relation to the noise level contour, currently proposed by DAA, at night time noise levels of > 55dB Lnight, to qualify for noise abatement measures for homes in the vicinity of Dublin Airport****. In the case of Vienna airport, homes in the vicinity with noise levels >54 dB during the day and >45dB at night are eligible for assistance towards soundproofing****.*"

The HSE concludes that:

"The proposed changes may have the cumulative effect of increasing sleep disturbance in residents in the surrounding area, and increasing overall daily noise exposure despite proposed mitigation measures, with potential adverse health outcomes."

12.3 HSE EHS Submission #1to Planning Authority

For daytime noise (Lden) the HSE references the WHO 2018 Guidelines stating:

> ***"The WHO 2018 Noise Guidelines strongly recommends reducing noise levels produced by aircraft below 45 dB Lden, as it states that aircraft noise above this level is associated with adverse health effects."***

On daytime noise, 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.***"

For night-time noise (Lnight) the HSE again references the WHO 2018 Guidelines stating:

> ***"The WHO 2018 Noise Guidelines strongly recommends reducing noise levels produced by aircraft during night time below 40 dB Lnight, as it states that aircraft noise above this level is associated with adverse effects on sleep."***

On night-time noise (Lnight) 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 submission discusses the research by the WHO on the impact of aircraft noise on health:

> ***"The World Health Organisation's Environmental Noise Guidelines 2018 summarise the research into the impact on health and exposure to aircraft noise. The critical health outcomes identified were:***
>
> ***For average noise exposure***
>
> 1. ***Cardiovascular disease***
> 2. ***Annoyance***
> 3. ***Cognitive impairment***
> 4. ***Hearing impairment and tinnitus***
>
> ***For night noise exposure***
>
> 1. ***Effects on sleep***

5. ***Adverse birth outcomes***
6. ***Quality of life, well-being and mental health***
7. ***Metabolic outcomes***

As already outlined above the WHO strongly recommends reducing aircraft noise levels to below 45 dB Lden, and for night noise exposure to below 40 dB Lnight, as aircraft noise above these levels is associated with the above adverse health effects.

In order to reduce these health effects, the WHO strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the WHO recommends implementing suitable changes in infrastructure."

The HSE EHS further state:

"***The EHS acknowledges that the increase in people exposed to 50 dB Lden and 45 dB Lnight may result in adverse health effects as outlined in the World Health Organisation's Environmental Noise Guidelines 2018. Due to this the EHS feels that the mitigation measures proposed must be reflected in these increased numbers in order to reduce as much as possible the number of people exposed. The EHS also feels that the WHO levels of 45 dB Lden and 40 dB Lnight should be used when assessing eligibility for schemes such as the sound insulation improvement works."***

The HSE EHS are very clear that 45 dB Lden and 40 dB Lnight should be used for assessing insulation improvement works. This is in line with the proposed amendment in the Development Plan and justifies its inclusion.

12.4 HSE EHS Submission #2 To Planning Authority

The submission concludes:

"The EHS makes the following observations in relation to this proposed development:

- ***The Conditions 3(d) and 5 were put in place to protect public health so if planning authority are going to increase the hours of operation they must ensure all who are significantly impacted have the opportunity of mitigation.***
- ***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.***"

The HSE clearly state that Conditions 3(d) and 5 were put in place to protect public health and any changes to the planning conditions must ensure that mitigation is provided to all those who are significantly impacted. Noise levels must be reduced to below 45 dB Lden and 40 dB Lnight.

12.5 Submission to ANCA

In their submission to the ANCA draft regulatory decision, the HSE EHS section state that in relation to Condition 1 of the Draft Regulatory Decision:

> "*The rationale given is not a rationale for revoking condition 5 of the current planning permission, but is a rationale for the Noise Quota Scheme proposed*."

It further states that in relation to condition 2:

> "*The rationale given for amending the existing conditions is not given. The reasons given are for the new controls, which are less stringent than existing*."

The HSE submission states that the existing Planning Conditions are in place to protect public health and that:

"***The operating restrictions already exist and the Draft Regulatory Decision is to revoke and amend them, there should therefore be a clear rationale for this and clear evidence that the mitigation measures proposed will ensure there is not a diminishing of health protection that is compliant with the existing operating restrictions*.**"

It is very evident that revoking and amending the existing conditions will result in a diminishing of health protection. From table 7.21 of ANCA's Regulatory Decision Report the number of people Highly Sleep Disturbed increases from 22500 to 37080 by revoking and amending the existing planning conditions. The populations exposed to night-time noise >55dB Lnight will increase from 280 to 1059.

Table 7.21: Population HSD, HA and exposed above the NAO priorities in 2019 and in 2025 for the modelled runway use and restriction scenarios

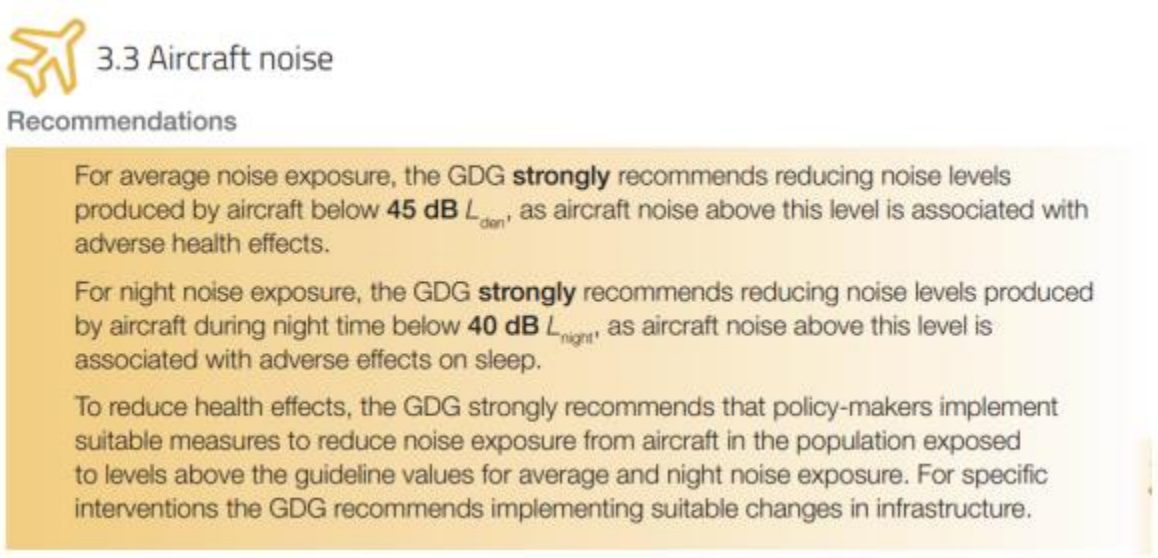
Scenario	Population HSD	Population > 55 dB L_{night}	Population HA	Population > 65 dB L_{den}
2019 Situation	47,045	1,533	115,738	285
2025 P01 30.4 mmpa	22,500	280	64,241	119
2025 P02 32.0 mppa	37,080	1,059	79,405	196

The HSE state that if the planning authority and ANCA are going to increase the hours of operation of the runways, then they must ensure all who are significantly impacted have the opportunity of mitigation. This is not the case with the current application as only those 'highly significantly' and 'profoundly' affected are offered mitigation in the form of insulation.

The HSE also reiterates its previous submissions to the Planning Authority:

> ***"The Conditions 3(d) and 5 were put in place to protect public health so if planning authority are going to increase the hours of operation they must ensure all who are significantly impacted have the opportunity of mitigation."***

The HSE references the WHO 2018 Guidelines and notes that 45dB Lden and 40dB Lnight are "**strong recommendations based on a complete review of the health research around aircraft noise."**



3.3 Aircraft noise

Recommendations

For average noise exposure, the GDG **strongly** recommends reducing noise levels produced by aircraft below **45 dB** L_{den}, as aircraft noise above this level is associated with adverse health effects.

For night noise exposure, the GDG **strongly** recommends reducing noise levels produced by aircraft during night time below **40 dB** L_{night}, as aircraft noise above this level is associated with adverse effects on sleep.

To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the GDG recommends implementing suitable changes in infrastructure.

They further reiterate their view that:

"*It is therefore important that the noise mitigation measures are made available to all parties that are significantly impacted by the proposal to ensure protection of health*."

The current proposal has failed to cater for all populations significantly affected by noise. It will result in a diminishing of health protection.

Astonishingly the HSE submissions are not mentioned in ANCA's Consultation Report. It is also worth noting that ANCA never formally requested the HSE to make a submission to their consultation process. It is a serious dereliction of their duties to not invite the State agency whose role is to protect Public Health.

12.6 HSE Public Health Area A Department's Submission to Proposed Material Alterations to The Fingal Development Plan

The HSE Public Health Area A made a submission on the Material Alterations to the Development Plan and made specific reference to PA CH 8.1. They state that:

> "*International evidence is in abundance demonstrating the increased exposure to aircraft noise is associated with an increase in diagnoses of cardiovascular disease, substance misuse/mental health emergencies and insomnia among local residents.*
>
> *There has been considerable research into the effect of aircraft noise on cognitive performance in schoolchildren, due to the interruptive nature of high levels of aircraft noise. Research has suggested effects on reading comprehension and memory. Cognitive performance affects attention, perception, mood, learning and memory. There is evidence to suggest that long-term aircraft noise has a harmful effect on memory, sustained attention, reading comprehension and reading ability. Early studies highlighted that aircraft noise was also implicated in children from noisy areas having a higher degree of helplessness i.e. were more likely to give up on difficult tasks than those children in quieter areas. Reports often indicated that children exposed to long-term aircraft noise showed a higher degree of annoyance than those children from quieter areas. Evidence has been presented to suggest that children do not habituate to aircraft noise over time, and that an increase in noise can be correlated with a delay in reading comprehension compared to those children not exposed to high levels of aircraft noise.*
>
> *A 2021 study was the first to investigate the role of annoyance due to aircraft noise and of sensitivity to noise in the association between aircraft noise exposure and medication use, with a large European study population. The results showed significant associations between aircraft noise annoyance and the use of antihypertensive, anxiolytic-hypnotic-sedative, and anti-asthmatic medication, as well as between aircraft noise exposure and antihypertensive medication use".*

The HSE conclude that:

> *"**HSE Public Health Area A strongly supports the development and implementation of measures to mitigate against excess aircraft noise, and advocates that such measures are expedited insofar as possible***".

13.0 FINGAL ENVIRONMENTAL HEALTH AIR & NOISE UNIT

13.0 What has changed

This is a new chapter highlighting a submission from Fingal's Environmental Health Air & Nosie Unit, dated 15/10/2021, on the daa's revised planning application.

13.1 Submission to Planning Authority

The submission references the EIAR that has identified that a significant portion of people will be exposed to high levels of noise:

Noise level exposure – Proposed scenario v's Permitted scenario:

2022- 4% more people are likely to be highly annoyed by the 2022 proposed scenario than that of permitted scenario for 2022.

2022 -2% more people are likely to be highly sleep deprived by the 2022 proposed scenario than that of the 2022 permitted scenario.

2025-24% more people are likely to be highly annoyed by the 2025 proposed scenario than that of the 2025 permitted scenario.

2025- 65% more people are likely to be highly sleep deprived by the 2025 proposed scenario than that of the 2025 permitted scenario.

2035-19% more people are likely to be highly annoyed by the 2035 proposed scenario than that of the 2035 permitted scenario.

2035-65% more people are likely to be highly sleep deprived by the 2025 proposed scenario than that of the 2025 permitted scenario.

The submission references the WHO 2018 Guidelines:

> "***The 2018 WHO guidelines strongly recommend reducing night noise exposure levels produced by aircraft during night time to below 40dB Lnight. Aircraft noise above these levels are associated with adverse health effects. The DAA have modelled the night time insulation programme on exposure levels of 55dB which leaves a significant proportion of people exposed to night time levels above the 40dB exposure level recommended by WHO.***"

The submission further states that the removal of Condition 3(d) and the replacement of Condition 5:

> ***"will have an adverse effect on a large percentage of the population."***

The submission concludes:

> ***"It is recommended that consideration is given to the proposed noise mitigation measures i.e. to provide an extension of the noise insulation schemes to include the 2018 WHO Environmental noise guidelines."***

14.0 LA_{MAX} SINGLE NOISE EVENTS

14.0 What has changed

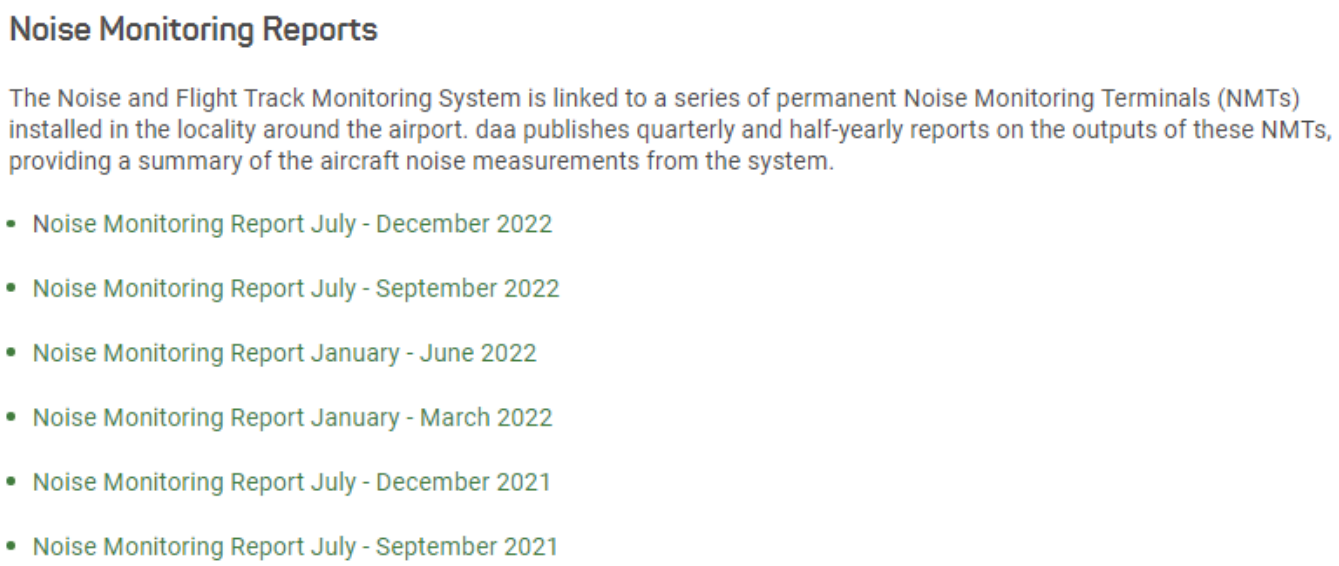
This chapter is a revision of chapter 17.0 in the appeal document. It highlights that the daa have not published LAmax statistics since December 2022. Therefore, there are no LAmax statistics available for the North Runway. This is unacceptable and a point that the Board needs to question. It includes a discussion on the LAmax statistics from July-December 2022 and shows how the height of aircraft at the monitors for both arrivals and departures has reduced. It also includes the latest N60 and N65 contours and statistics from the revised EIAR Supplement.

14.1 Summary

It has been impossible to properly update this Chapter from the Appeal document with the latest LAmax data as the daa have failed to provide access to the data. I refer to the Noise Reports section of the daa's website:

https://www.dublinairport.com/corporate/corporate-social-responsibility/noise/airport-noise-noise-reports

The Noise Monitoring Reports which provide data on the LAmax statistics for the various noise monitoring terminals (NMTs) have not been made available since December 2022:



Noise Monitoring Reports

The Noise and Flight Track Monitoring System is linked to a series of permanent Noise Monitoring Terminals (NMTs) installed in the locality around the airport. daa publishes quarterly and half-yearly reports on the outputs of these NMTs, providing a summary of the aircraft noise measurements from the system.

- Noise Monitoring Report July - December 2022
- Noise Monitoring Report July - September 2022
- Noise Monitoring Report January - June 2022
- Noise Monitoring Report January - March 2022
- Noise Monitoring Report July - December 2021
- Noise Monitoring Report July - September 2021

Numerous requests have been made to the daa through community Forums, such as the CLG and DAEWG, but the daa have not provided it. This is an astonishing omission of data that the daa is obliged to provide as part of Condition 10 of the North Runway's planning permission:

10. Noise and flight track monitoring shall be operated at all times as detailed in the Environmental Impact Statement Addendum received by the planning authority on the 9th day of August, 2005 and in accordance with the recommendations of ECAC.CEAC.Doc 29. An annual report on noise contours shall be submitted to the planning authority. A noise and flight track monitoring report shall be submitted to the planning authority on a quarterly basis and shall be made available for public inspection. The results of the noise and flight track monitoring shall be used to re-evaluate noise impacts and the application of mitigation measures, including (a) the noise insulation scheme (including residences and schools) and (b) the property buy-out scheme, biannually.

Reason: To protect the amenities of the area and to ensure ongoing monitoring and verification of the proposed noise mitigation measures.

Here is a link to the last report published by the daa covering the period July – December 2022:

https://www.dublinairport.com/docs/default-source/airport-noise/noise-monitoring-report-july---december-2022.pdf?Status=Temp&sfvrsn=f7b919fc_2

Here's the introduction section of the report:

Introduction

This half yearly, commissioned by Dublin Airport, presents a summary of the noise performance near Dublin Airport, for the period from July 1st to December 31st 2022.

To monitor aircraft noise levels and flight tracks near Dublin Airport, a Noise and Flight Track Monitoring System (NFTMS) is in place. This system, by Envirosuite, is composed of a feed from Air Traffic Control radar to capture the aircraft, and a series of Noise Monitoring Terminals (NMTs) which are installed in the area around the airport. In total, seven NMTs are in place:

- Bay Lane: (NMT 1: monitoring runway 28L departures and runway 10R arrivals)
- St. Doolaghs: (NMT 2: monitoring runway 10R departures and runway 28L arrivals)
- Bishopswood: (NMT 3: monitoring local area)
- Feltrim: (NMT 4: monitoring local area)
- Balcultry: (NMT 5: monitoring runway 34 departures and runway 16 arrivals)
- Artane: (NMT 6: monitoring runway 16 departures and runway 34 arrivals)
- Coast Road: (NMT 20: monitoring runway 10R departures and runway 28L arrivals)

This report presents the results of the measurements in the period from the start of July to the end of December 2022 for all NMT locations. The NMT locations are shown in Figure 2. General statistics of flight operations of Dublin Airport in the second half of 2022 are provided in the General Statistics section. Results specific to the measurements obtained at the various monitoring stations are presented in the Noise Monitoring Statistics section.

For a given time period, the report collates:

- General statistics on hourly distribution of flights
- Aircraft type distribution
- Runway use
- Average altitude at each NMT
- Busiest day flight tracks
- Average NMT figures
- For each NMT:
    - Breakdown of noise events
    - Top 10 loudest aircraft types
    - LAeq16
    - LAeq8
    - LAeq1
    - LAmax
    - LAmax distribution

This data is of vital importance to understanding the noise situation around Dublin Airport. This data has become even more important with the flight path changes since the North Runway opened.

The daa has also installed more NMTs and provided temporary NMTs which would help present a more accurate picture of the noise situation since the North Runway has now become fully operational.

This data has been kept from the public and serious questions need to be asked of the daa and raised with them. An Bord Pleanála should insist on access to this data.

Another worrying aspect of the NMTs presented in the Noise Monitoring reports to date, is that there are no NMTs in place under North Runway Westerly departures. NMT3 does pick up arrivals from the West to the North Runway as it was clearly put in place in anticipation of straight-out departures based on the 2007 planning permission. The daa has installed a NMT at NewPark and a temporary monitor at Kilcoskan National School. This data should be presented in up to date Noise Monitoring reports that can be examined by the public and the relevant authorities such as ANCA, Fingal County Council and ABP. One can only speculate why the daa has kept this information from the public and relevant authorities with this current appeal ongoing. This deliberate withholding of critical noise data is further evidence that this noise monitoring should be removed from the daa and handed to an independent body.

14.2 ProPG Guidelines

The planning noise zones adopted by Fingal County Council in Variation number 1 of the Fingal Development Plan stipulate that planning 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_{AmaxF}, 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_{AmaxF} 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*."

This is a clear statement from BAP noise consultants that this guidance on LAmax occurrences is still current and valid. This is in direct contrast to ANCA's response in the Consultation Report. In the WHO 2018 Guidelines, it states on page 28 that:

> *"the current guideline values for the night time are only based on the prevalence of self-reported sleep disturbance and do not take physiological effects into account*" and
>
> "*the current guidelines are restricted to long-term health effects during night time and therefore only include recommendations about average noise indicators: Lnight. Nevertheless, the evidence review on noise and sleep (Basner & McGuire, 2018) includes an overview of single-event exposure–effect relationships*".

The results from the '*Basner & McGuire'* review consistently indicate that a 10dBA increase in the indoor maximum noise level is associated with an Odds Ratio for awakenings or sleep stage changes to Stage 1 of 1.3 or higher.

Table 13. Summary of findings.

Sleep Outcomes	Noise Source	Number of Participants (Studies)	Quality of Evidence	Noise Metric	Odds Ratio per 10 dBA Increase (95% CI)
Cortical Awakenings in Adults	Road	94 (2)	⊕⊕⊕O Moderate There was evidence of dose-response	Indoor $L_{AS,max}$	1.36 (1.19–1.55)
	Rail	33 (1)	⊕⊕⊕O Moderate There was evidence of dose-response	Indoor $L_{AS,max}$	1.35 (1.21–1.52)
	Aircraft	61 (1)	⊕⊕⊕O Moderate There was evidence of dose-response	Indoor $L_{AS,max}$	1.35 (1.22–1.50)
Self-Reported Sleep Disturbance in Adults (Noise Source Specified)	Road	20,120 (12)	⊕⊕⊕O Moderate There was evidence of dose-response	Outdoor L_{night}	2.13 (1.82–2.48)
	Rail	7133 (5)	⊕⊕⊕O Moderate There was evidence of dose-response	Outdoor L_{night}	3.06 (2.38–3.93)
	Aircraft	6371 (6)	⊕⊕⊕O Moderate There was evidence of dose-response	Outdoor L_{night}	1.94 (1.61–2.33)

The WHO 2018 Guidelines state on page 75 that:

> "*There is additional uncertainty when characterizing exposure using the acoustical description of aircraft noise by means of Lden or Lnight. Use of these average noise indicators may limit the ability to observe associations between exposure to aircraft noise and some health outcomes (such as awakening reactions); as such, noise indicators based on the number of events (such as the frequency distribution of LA,max) may be better suited*."

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) make 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 is 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.

14.3 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 last reported published is for July-December 2022. Table 4 provides overflying altitudes at the various noise monitoring terminals (NMTs) comparing 2022 with 2021:

NMTs	Height (ft)			
	2021		2022	
	A	D	A	D
NMT1	680	2,340	670	2,280
NMT2	850	2,530	850	2,410
NMT3	740	2,340	760	2,270
NMT4	970	2,830	1,000	2,710
NMT5	870	4,730	860	3,630
NMT6	900	3,270	1,050	2,660
NMT20	1,500	3,400	1,500	3,240

Table 4: Average overflight height

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.



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

What is apparent is that arrivals and departures are getting lower over the NMTs. This may be due to higher loading factors.

The report provides the LAmax distribution for NMT1:

Figure 22 shows the LAmax distribution for aircraft noise for the second half of 2022 for NMT1.

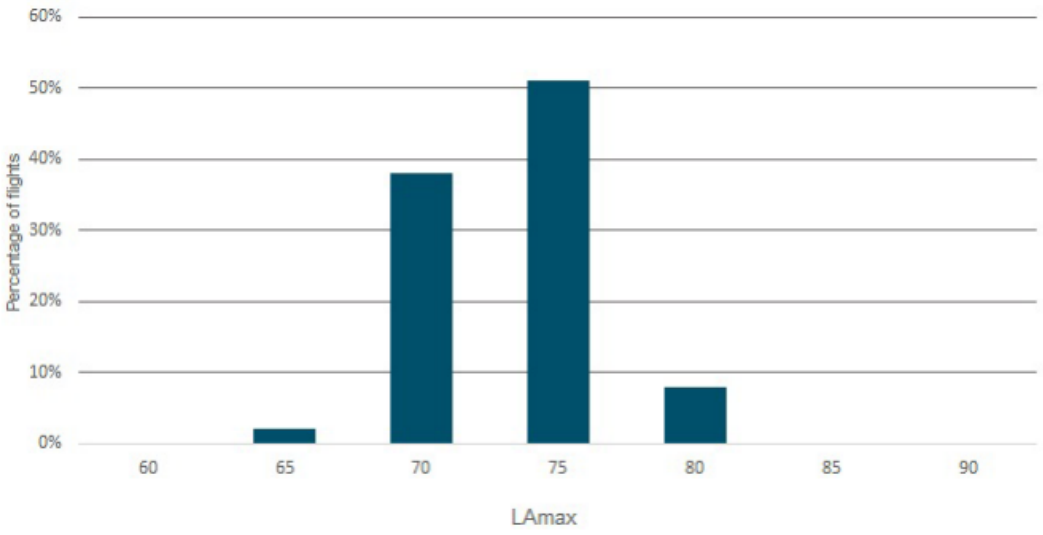


Figure 28: LAmax levels distribution for NMT 1, July – December 2022

The figure above shows that approximately 60% of aircraft movements detected at NMT1 had a LAmax value > 75 dB. Approximately 8% had a LAmax value > 80 dB. And NMT1 is 6.5km from start of roll.

14.4 BAP Presentation

At a Community Liaison Group (CLG) meeting in April 2017, 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.

NFTMS NMT1 Bay Lane – Details



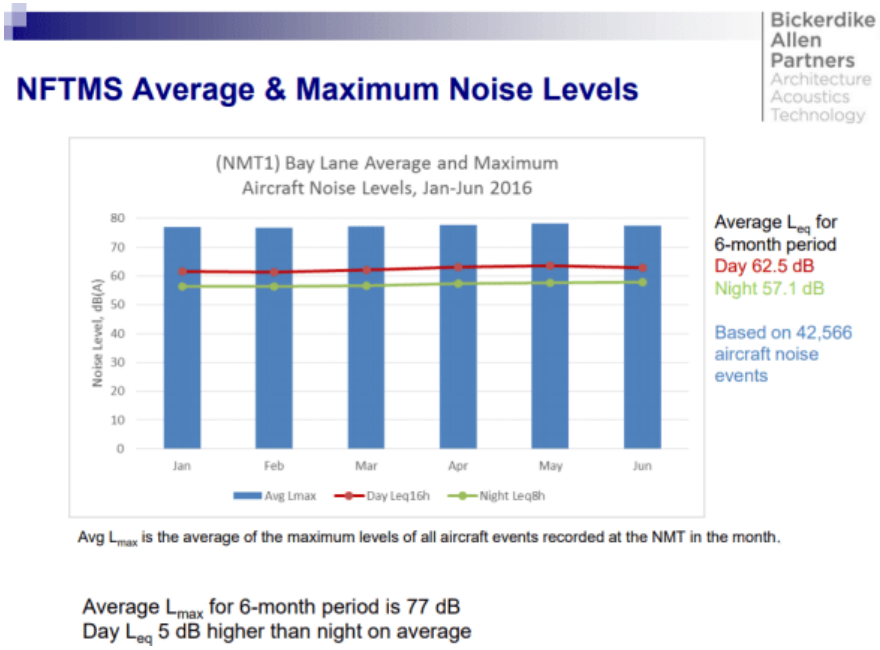


NFTMS NMT3 Bishopswood – Details

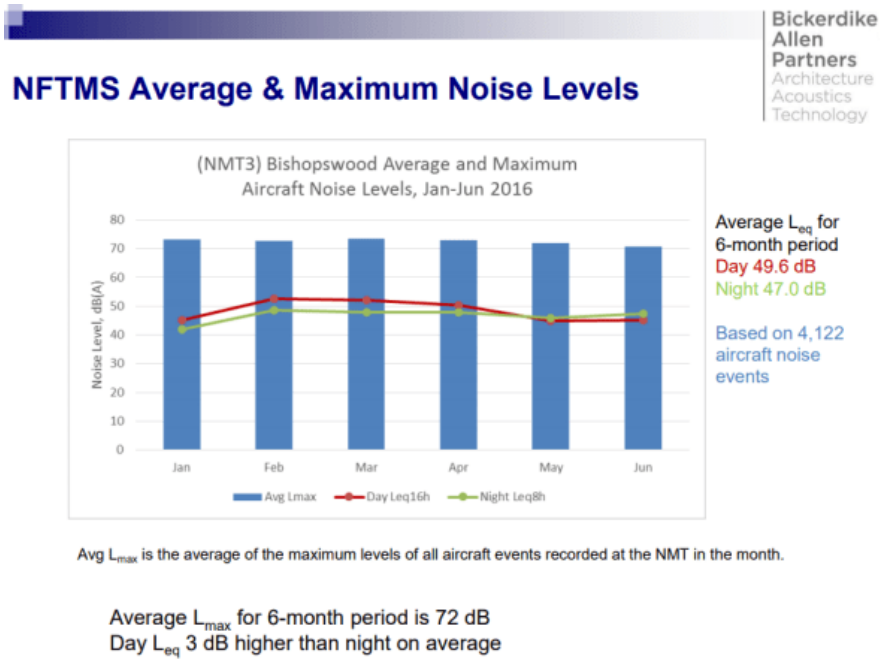




Average LAmax at NMT1 from January-June 2016 was 77 dB:



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



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 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***".

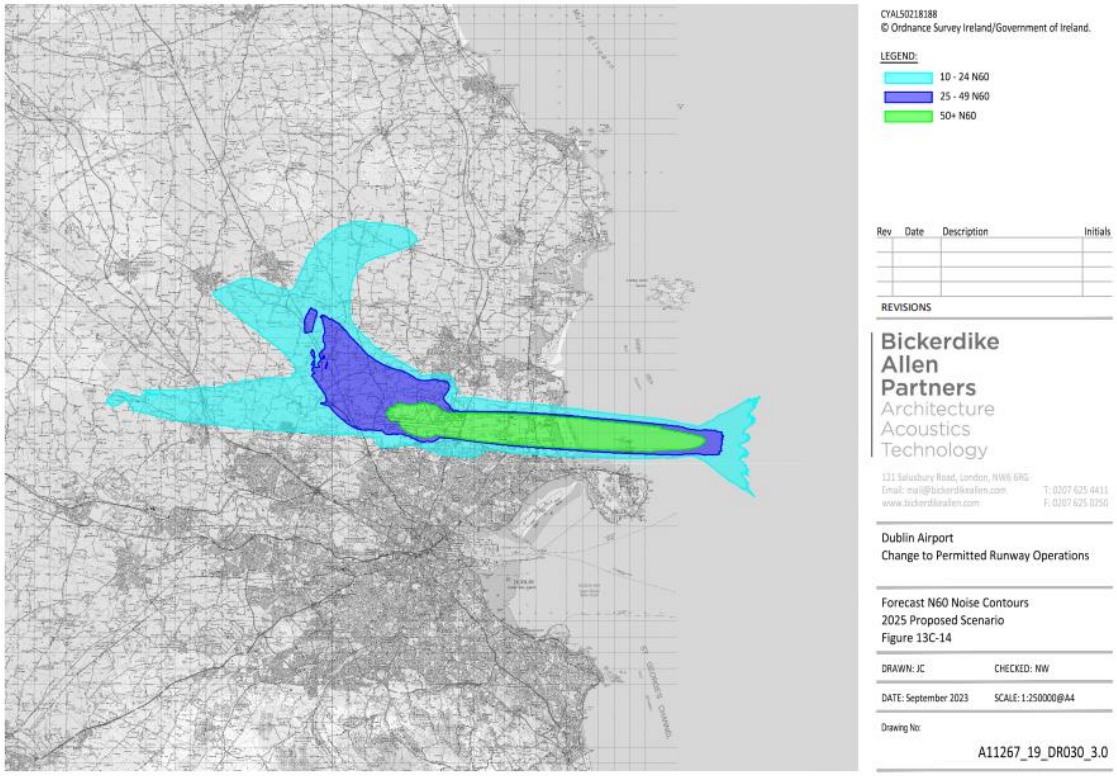
In table 13C-56 of the revised EIAR Supplement from the further information request, the existing population counts for the N60 metric are given. N60 is the number of events above 60dB LAmax per night-time period.

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

Metric Value, N60	Scenario and Existing Population Count				
	2018	2025 Permitted	2025 Proposed	2035 Permitted	2035 Proposed
≥ 10	69,613	44,191	46,373	23,692	34,088
≥ 25	24,638	11,946	11,739	11,759	10,542
≥ 50	80	23	6,828	26	6,577
≥ 100	0	0	0	0	0

The '2025 Proposed' scenario has 5% more people subjected to > 10 N60 noise events compared with '2025 Permitted'. However, '2025 Proposed' has **6,805** more people subjected to > 50 N60 noise events compared with '2025 Permitted'. This is an astonishing difference in the population exposed to frequent high levels of noise during the nighttime period.

The same can be seen with the '2035 Proposed' figures. **6,554** more people subjected to > 50 N60 noise events compared with '2035 Permitted'. Again, this is an astonishing difference in the population exposed to frequent high levels of noise during the nighttime period.



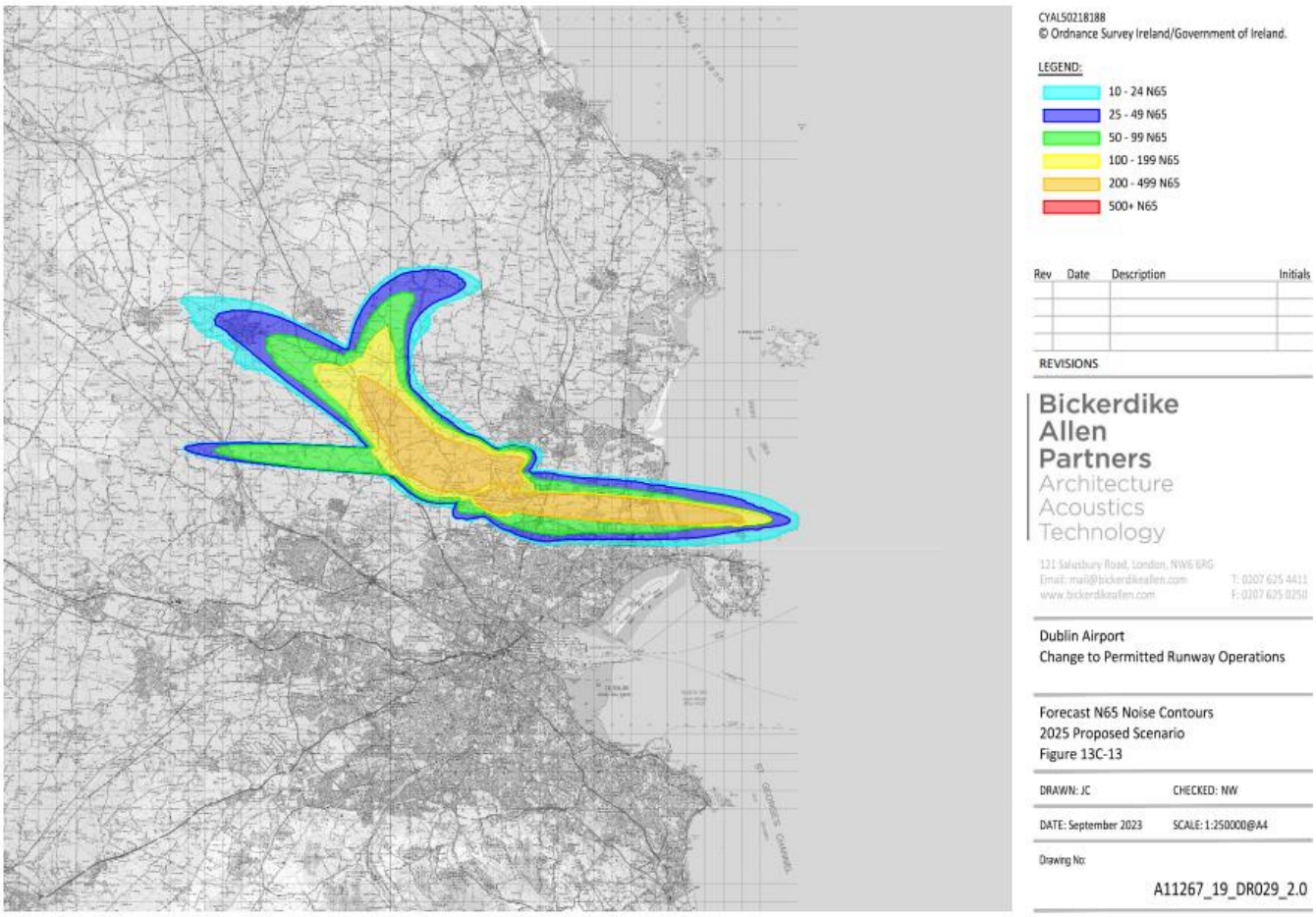
Based on the ProPG Guidelines, **46,373** people will not be able to sleep with their windows slightly open or risk having their sleep disturbed, with the '2025 Proposed' Scenario.



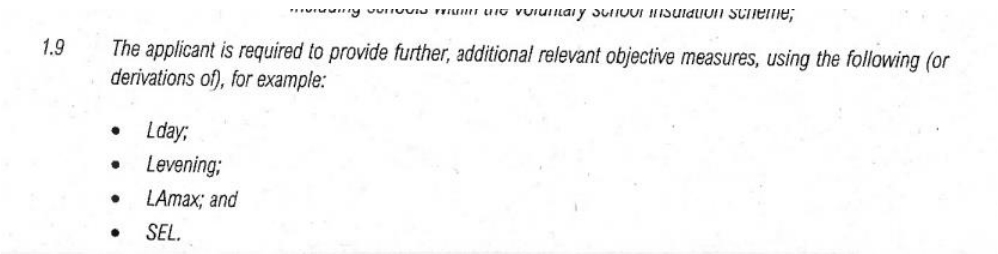
Based on the ProPG Guidelines, **34,088** people will not be able to sleep with their windows slightly open or risk having their sleep disturbed, with the '2035 Proposed' Scenario.

Another area that the daa and ANCA failed to address in their Regulatory Decision and EIAR Supplement is the combined effects of both excessive daytime and night-time exposures. When looking at the N65 Noise Contours, one can see a large overlap in the St Margarets The Ward and Portmarnock areas with the N60 Noise Contours. These populations are expected to endure > 25 N60 night-time events and > 200 N65 daytime events. There is **no respite** for these areas and ANCA have failed in their Regulatory Decision and Consultation Report to address this harmful 24-hour exposure and provided no respite which is common at other major airports.

Below is the latest N65 contours from the EIAR Supplement for 2025 Proposed:



It is interesting to note that ANCA requested SEL and LAmax data from the daa in their additional information request (anca-rf01.pdf) during the 32 to 35m passenger planning application (F19A/0449).



including schools within the voluntary school insulation scheme;

1.9 *The applicant is required to provide further, additional relevant objective measures, using the following (or derivations of), for example:*

- *Lday;*
- *Levening;*
- *LAmax; and*
- *SEL.*

In Annex I of Directive 2002/49/EC (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0049&from=EN) it lists both LAmax and SEL as

supplementary noise indicators, which have been dismissed by ANCA in their Regulatory Decision and Consultation Report without due consideration.

18.7.2002 EN Official Journal of the European Communities L 189/19

3. Supplementary noise indicators

In some cases, in addition to L_{den} and L_{night}, and where appropriate L_{day} and $L_{evening}$, it may be advantageous to use special noise indicators and related limit values. Some examples are given below:

- the noise source under consideration operates only for a small proportion of the time (for example, less than 20 % of the time over the total of the day periods in a year, the total of the evening periods in a year, or the total of the night periods in a year),
- the average number of noise events in one or more of the periods is very low (for example, less than one noise event an hour; a noise event could be defined as a noise that lasts less than five minutes; examples are the noise from a passing train or a passing aircraft),
- the low-frequency content of the noise is strong,
- L_{Amax}, or SEL (sound exposure level) for night period protection in the case of noise peaks,
- extra protection at the weekend or a specific part of the year,
- extra protection of the day period,
- extra protection of the evening period,
- a combination of noises from different sources,
- quiet areas in open country,
- the noise contains strong tonal components,
- the noise has an impulsive character.

ANCA's response to single event noise indicators such as SEL and LAmax has been simply to dismiss their use and attempted to base their rebuttal citing remarks in the WHO 2018 Guidelines:

Consultation Report – Pages 21 & 29

There is research which has used alternative metrics to describe the potential impacts of aircraft noise events on sleep, such as indoor and outdoor L_{Amax} levels, their distribution and occurrence. Whilst recognising that such metrics can be used to describe effects such as awakenings and physiological reaction, ENG18 states that: *"the relationship between different types of single-event noise indicators and long-term health outcomes at the population level remains tentative"*. As such the ENG18 made no recommendations for single-event noise indicators.

The regulatory framework under which ANCA is required to carry out its assessments specifies the use of annual-averaged noise exposure metrics. These take into account the level of individual aircraft noise events, such as those reported in a submitted 2018 'longitudinal analysis' along with the frequency of their occurrence. The objective of the regulatory framework is to limit and reduce the harmful effect of environmental noise. This relies on dose-response relationships taken from the ENG18. ENG18 considered single-event noise indicators, such as Sound Exposure Level (SEL) and L_{Amax}, however only found tentative evidence associated with these and long-term health outcomes.

15.0 INSULATION SCHEME

15.1 Lack of information

There are no additional comments to be made based on the EIAR Supplement as no information is available. The daa have admitted that new flight paths are in operation and yet no update is given on the insulation scheme and the populations newly affected by these flight paths. Note the insulation scheme approved for compliance as part of the North Runway's planning permission is based on straight out routes. Now we have divergent flight paths and no update provided in this revised EIAR. Significance and mitigation are key parts of an EIAR and the daa have failed to provide information on the populations affected and mitigation required. No maps highlighting the dwellings affected are given. **This lack of mitigation information is reason enough for the Board to recommend refusal**.

CONCLUSION

In this report we have outlined serious deficiencies with ANCA's regulatory decision and the daa's revised EIAR Supplement. A project of this magnitude requires a thorough public consultation. **326k** people will be exposed to daytime noise levels > 45dB Lden and **168k** 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 (WHO) 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 were 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.

The appeal submission included a health report from one of the foremost authorities, Professor Münzel, on aircraft noise and their effects on the cardiovascular system. His conclusions were 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. This conclusion is also backed up by Dr John Garvey, Medical Director of the Sleep Laboratory

in St Vincent's University Hospital who states that the Relevant Action is likely to harm health, especially in terms of sleep quality.

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 Regulatory 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 independence.

ANCA's Regulatory 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 regulatory 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. **53,854** people will be left Highly Annoyed and **23,884** 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%. **9,380** people will be significantly adversely affected, **553** Very Significantly affected and **176** Profoundly adversely affected at night. ANCA and the daa have failed 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 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 St Margaret's 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 Regulatory 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. To finance this relocation scheme, the community is advocating an increase to the passenger charge imposed on travellers along the lines of the 'Polluter Pays' principal. The monies raised from such a charge could be ring fenced to purchase Thornton Hall and provide housing for the displaced residents. The cost is borne by the 'Polluter' and not by Government.

In conclusion, we call on An Bord Pleanála to reject this Planning application and regulatory decision as there's no justification for it except inflicting health costs and carbon costs on the public.

CONTRIBUTORS

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APPENDIX A: **HSE.pdf**

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Health Service Executive

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Date:	28/01/2021
Our reference:	1516
Licence Type:	Planning Application
Name and address of applicant:	DAA PLC.
Location of facility:	Dublin Airport, Co. Dublin
Reference No:	F20A/0668
EIS/EIAR submitted:	Yes
Planning Authority to whom EIS/EIAR has been submitted:	Fingal County Council

Dear Sir/Madam

Please find enclosed the HSE consultation reports in relation to the above planning application. If you have any queries regarding any of this report the initial contact is Ms Geraldine O Callaghan, Principal Environmental Health Officer, who will refer your query to the appropriate person

Yours faithfully,

Geraldine O Callaghan
Principal Environmental Health Officer

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Environmental Health
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Tel +353 (0)1 8976140
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EIS/EIAR submitted:	Yes
Planning Authority to whom EIS/EIAR has been submitted:	Fingal County Council

Introduction

The following HSE departments were notified of the consultation request for the licence application on 7th January 2021

- Emergency Planning – Brendan Lawlor
- Estates – Helen Maher
- Assistant National Director for Health Protection – Kevin Kelleher / Laura Murphy
- CHO – Mellany McLoone

This report only comments on Environmental Health impacts of the licence application.

Environmental Health Submission

EHS Ref: 1516

Planning Ref: F20A/0668 Fingal County Council

Description of Project:
The proposed Relevant Action is to remove the numerical cap on the number of flights permitted between the hours of 11pm and 7am daily that are due to come into effect in accordance with the North Runway Permission and to replace them with an annual night-time noise quota between the hours of 11.30pm and 6am and also to allow flights to take off from and/or land on the North Runway for an additional 2 hours i.e. 2300 hrs to 2400hrs and 0600 hrs to 0700 hrs. Overall, this would allow for an increase in the number of flights taking off and/or landing at Dublin Airport between 2300 hrs and 0700 hrs over and above the number stipulated in condition no. 5 of the North Runway Permission, in accordance with the proposed annual night time noise quota.

Air Quality:
The EHS have assessed chapter 10 which looks at Air Quality with particular attention on concentrations at nearby human health sensitive receptors. For the EIAR an air quality impact assessment was undertaken to assess the impact of emissions on local air quality primarily due to the proposed change in aircraft movements.

The assessment focuses on the impact and effect of changes to long-term and short-term concentrations of nitrogen dioxide (NO2) and Particulate Matter (PM_{10} and $PM_{2.5}$). These are considered to be the pollutants of greatest concern from aircraft emissions

The first thing the EHS noted was Dublin airport's own pollution monitoring which is outlined in section 10.5.1.1. From this data we can see that the annual mean NO2 and PM10 concentrations monitored at Dublin Airport are consistently below relevant air quality standard values, typically representing around 50 - 60% of those values, as displayed in Table 10-4.

The DAA have also undertaken the measurements of NO2, and benzene (C6H6) using passive sampling by diffusion tubes at several offsite locations in the vicinity of Dublin Airport. The annual data for these measurements are shown in Tables 10-5 to 10-7 and they demonstrate that the Air Quality Limit Values for the pollutants monitored are not being exceeded.

EHS notes that for the detailed modelling study a total of 52 existing receptors were modelled that may be affected by the operation of the permitted North Runaway, the details of which can be found in Table 10-11 and Figure 10-1 of the EIAR.

Section 10.6 outlines the predicted annual mean NO2, PM_{10} and $PM_{2.5}$ concentrations for Permitted and Proposed scenarios and associated impacts. All of the predicted NO2 levels fall well below the Limit Values. There was no exceedances of the annual mean Limit Values for PM_{10} and $PM_{2.5}$ the values for which were all well below the annual mean Limit Values.

The EHS is satisfied with the conclusion in the EIAR which states that the model was based on a conservative assessment and even with this worst case scenario the annual mean concentrations of all the pollutants considered are below the relevant Limit Values for all of the assessed receptor locations. Concentration changes between the permitted and proposed Relevant Action show residual effects to be Not Significant.

Water:
The EHS have assessed chapter 12 which looks at the likely significant effects on the water

environment of the proposed development. The EHS is satisfied that the proposed development will not have any significant effect on the water environment.

Noise:

The EHS have based their assessment on Chapter 13 - Air craft noise and Vibration (Air) on The World Health Organisation's Environmental Noise Guidelines 2018, as endorsed by the European Commission through Directive 2020/367.

The WHO 2018 Noise Guidelines strongly recommends reducing noise levels produced by aircraft below 45 dB Lden, as it states that aircraft noise above this level is associated with adverse health effects.

The EIAR based its Noise surveys on future forecast scenarios for the selected years of 2022 and 2025. It compared the situation with the Relevant Action with three situations, that in 2018 (2018 Baseline), that in the corresponding future year with the North Runway operational and the current conditions in place (2022 or 2025 Baseline).

With the above in mind the EHS looked at the results of the noise surveys in Section 13.4. The World Health Organisation's Environmental Noise Guidelines 2018, provide a method for calculating the number of people highly annoyed by airborne aircraft noise which has been used in the EIAR. The aim of this method is to give an overall picture of the noise exposure by assessing a percentage of people as being highly annoyed at different noise levels. For example, around 10% are assessed as being highly annoyed at a noise level of 45 dB Lden, increasing to around 67% at a noise level of 75 dB Lden.

The EIAR states that the number of people exposed to aircraft noise increased from the 2018 Baseline to the 2019 Baseline. Consequently, the number of people assessed as highly annoyed by aircraft noise also increased, specifically by 5% from 110,234 to 115,740. The number of people exposed to at least a high level of noise (i.e. 65 dB Lden or above) increased from 251 to 285.

However when the EIAR compares the 2018 baseline and the forecast 2022 Baseline the number of people exposed to aircraft noise is forecast to reduce for all contour levels. Consequently, the number of people assessed as highly annoyed by aircraft noise also decreases, specifically by 41% from 110,234 to 65,227. The number of people exposed to at least a high level of noise (i.e. 65 dB Lden or above) decreases from 251 to 133.

This number is further reduced in the 2025 Baseline scenario to 63,316 people assessed as highly annoyed and 128 people exposed to at least a high noise level.

The EIAR also identifies the number of non-residential receptors exposed to the thresholds. There is a reduction of one between 2018 and 2019, and a further reduction of 3 is forecast in the 2022 baseline scenario. There was no change in the 2022 and 2025 Baseline scenarios.

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 63,316 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 recommendations of 45Lden.

The WHO 2018 Noise Guidelines strongly recommends reducing night noise exposure levels produced by aircraft during night time below 40 dB Lnight, as it states aircraft noise above this level is associated with adverse effects on sleep.

The World Health Organisation's Environmental Noise Guidelines 2018 provide a method for calculating the number of people highly sleep disturbed by airborne aircraft noise which has been used by the EIAR. This aim of the method is to give an overall picture of the noise exposure by assessing a percentage of people as being highly sleep disturbed at different noise levels.

The EIAR states that the number of people exposed to aircraft noise increased from the 2018 Baseline to the 2019 Baseline, for all contour levels. Consequently, the number of people assessed as highly sleep disturbed by aircraft noise also increases, specifically by 11% from 42,260 to 47,044. The number of people exposed to at least a high level of noise (i.e. 55 dB Lnight or above) increases from 753 to 1,533.

However when the EIAR compares the 2018 baseline and the forecast 2022 Baseline the number of people exposed to aircraft noise is forecast to reduce for all contour levels. Consequently the number of people assessed as highly sleep disturbed by aircraft noise also decreases, specifically by 53% from 42,260 to 19,690. The number of people exposed to at least a high level of noise (i.e. 55 dB Lnight or above) decreases from 753 to 284.

This number is further reduced in the 2025 Baseline scenario to 19,464 people assessed as highly sleep disturbed and 281 people exposed to at least a high noise level.

The EIAR also identifies the number of non-residential receptors exposed to the thresholds, of these, only residential healthcare facilities are highly sensitive to noise at night. There is a reduction of 2, from 4 to 2, between 2018 and 2019, the forecast is to remain the same in the 2022 and 2025 Baseline scenarios.

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 19,464 people assessed as highly annoyed 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 recommendations of 40Lnight.

The World Health Organisation's Environmental Noise Guidelines 2018 summarise the research into the impact on health and exposure to aircraft nose. The critical health outcomes identified were:

For average noise exposure

1. Cardiovascular disease

2. Annoyance

3. Cognitive impairment

For night noise exposure

1. Effects on sleep

4. Hearing impairment and tinnitus

5. Adverse birth outcomes

6. Quality of life, well-being and mental health

7. Metabolic outcomes

As already outlined above the WHO strongly recommends reducing aircraft noise levels to below 45 dB Lden, and for night noise exposure to below 40 dB Lnight, as aircraft noise above these level is associated with the above adverse health effects.

In order to reduce these health effects, the WHO strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the WHO recommends implementing suitable changes in infrastructure.

The EIAR also looked at the number of dwellings exceeding the threshold for potential vibration effects due to airborne aircraft. The EHS is satisfied that there will be no dwellings which experienced noise levels in excess of 97 dB LCmax at least once per day. This is down from 4 dwellings identified in the 2018 baseline scenario.

With WHO's recommendation on specific interventions on implementing suitable changes in infrastructure in mind the EHS the has assessed how the EIAR outlines ways in which the airport is reducing noise. These actions are welcomed by the EHS, they are out lined in section 13.5.2. They include the following.

- Land Zones: These are areas of land identified by the DAA to restrict unsuitable development in the noise zones. The EIAR states that with the north runway set to become operational in 2022, updated information has become available relating to aircraft noise performance and flight paths. Due to this it was considered appropriate to update the noise zones for Dublin Airport to allow for more effective land use planning for development within airport noise zones. The Noise Zones and policies relating to development in Noise Zones are set out in Variation No. 1 to the Fingal Development Plan 2017 – 2023.

- Residential Sound Insulation Schemes: Dublin Airport operates an insulation scheme for dwellings exposed to 63 dB LAeq,16h or greater. The 63 dB LAeq,16h contour eligibility as part of the North Runway scheme will be reviewed every two years following the opening of the North Runway as required by the planning conditions.

- Schools Sound Insulation Scheme: A voluntary insulation scheme is on offer for all schools and registered pre-schools which fall within the predicted 60 dB LAeq,16h contour.

- Dwelling Purchase Scheme: Eligibility for the Scheme is based on the predicted 69 dB LAeq,16h contour. Five dwellings are currently located in this contour, however the daa has voluntarily extended participation in the Scheme to a further 33 dwellings.

Additional noise mitigation measures are outlined in section 13.7. Again these are welcomed by the EHS. They include.

- An Annual Noise Quota (ANQ) system to replace the limit of 65 flights per night.
- A preferential runway use system.
- A night noise insulation scheme. This scheme will provide a grant of €20,000 to fund sound insulation improvement works, for dwellings meeting either of the following criteria:
    - Forecast to be exposed to night-time noise levels of at least 55 dB Lnight in the 2025 Relevant Action scenario, or
    - Forecast to be exposed to noise levels greater than 50 dB Lnight in the 2022 Relevant Action scenario, accompanied by an increase of at least 9 dB when compared to 2018.

- Noise Monitoring Framework. The proposal is to implement a framework for monitoring the noise performance with respect to any Noise Abatement Objective (NAO) set by the Aircraft Noise Competent Authority (ANCA). Performance will be reported annually to ANCA, in compliance with the relevant sections of the Aircraft Noise (Dublin Airport) Regulation Act 2019. While this is welcomed by the EHS the proposal doesn't outline what measures can or will be taken if poor performances are identified.

Ground Noise and Vibration:

The EHS have assessed Chapter 14 – Ground Noise and Vibration, which assesses the likely significant effects from ground noise. Ground noise specifically includes noise associated with aircraft on the ground at Dublin Airport. This excludes any start of roll or reverse thrust activities, which are considered to be part of the air noise and covered in Chapter 13. The main aircraft ground operations include aircraft taxiing and aircraft using auxiliary power units (APUs) when on stands.

The EHS are satisfied with the EIAR's statement that *"Aircraft ground activities do not typically produce any significant vibration effects at sensitive receptors outside of the airport site, and therefore the assessment of vibration due to aircraft ground operations has been scoped out of the EIA."*

Section 14.3.4 looks at Methodology for Determining Baseline Conditions and Sensitive Receptors. The EIAR states that *"the study area contains all receptors exposed to ground noise levels of at least 50 dB Lden or 45 dB Lnight. This includes all of the receptors that experience potential significant effects. Although significant effects can in theory be found down to 45 dB Lden and 40 dB Lnight, the change in noise level required for this finding was not experienced at any of the assessed receptors."*

The EHS if of the opinion that The World Health Organisation's Environmental Noise Guidelines 2018 should also have been used for ground noise. As stated already in this report The WHO strongly recommends reducing noise levels produced by aircraft to below 45 dB Lden, as aircraft noise above this level is associated with adverse health effects and for night noise exposure, the WHO strongly recommends reducing noise levels produced by aircraft during night time below 40 dB Lnight, as aircraft noise above this level is associated with adverse effects on sleep.

The EIAR first looks at the baseline Lden modelling comparing the 2018 baseline and the 2022 Baseline the following was found. The number of people exposed to at least a low level of ground noise (i.e. 50 dB Lden or above) decreases from 26,361 to 23,826, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB Lden or above) decreases from 6 to 3. Going forward to the 2025 Baseline Scenario, there is a small increase compared to the 2022 Baseline to 24,518 people exposed to at least a low ground noise level and no change to the 3 people exposed to a high ground noise level.

While the EHS welcomes the reduction in the people exposed to ground noise between the 2018 baseline and the 2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 24, 518 people assessed as being exposed to 50dB Lden or above and 3 people exposed to 65dB Lden or above.

The results from the Lnight modelling comparing the 2018 baseline and the 2022 Baseline the following was found. The number of people exposed to at least a low level of ground noise (i.e. 45 dB Lnight or above) decreases from 3,424 to 631, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB Lnight or above) decreases from 29 to 6. Going forward to the 2025 Baseline Scenario, there are further reductions to 578 people exposed to at least a low ground noise level and no change to the 6 people exposed to a high ground noise level.

While the EHS welcomes the significant reduction in the people exposed to ground noise between the 2018 baseline and the 2025 forecast baseline scenario it still acknowledges that a significant proportion of people, namely 578 people assessed as being exposed to 45dB Lnight or above and 6 people exposed to 55dB Lnight or above.

Section 14.5 outlines the measures already in place at Dublin Airport that reduce or mitigate the ground noise effects of aircraft operations. This include:

- Reducing the noise at source by the increased use of new quieter airplanes;
- Land use, planning and management which looks at noise zones and residential sound insulation schemes;
- Operational procedures where Dublin Airport have in place a range of operational procedures which serve to minimise ground noise and;
- Operating restrictions relating to the North Runway Permission.

Section 14.6 of the EIAR looks at the assessment of effects and significance.

While the EHS assessed all the scenarios covered in the EIAR it was decided to only address the Worst-case Year 2025 Apron 5H Lden Metric and Lnight Metric in this report as these scenario have the potential to effect more people and as such mitigation measure to best counter this should be implemented. For clarification Apron 5H is a separate planning application which has been submitted to the planning authority that seeks to develop an area in the north east of the airport site, which will result in 10 aircraft stands being located there.

The EIAR states that comparing the 2025 Apron 5H scenario with the 2025 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 50 dB Lden or above) is forecast to

increase from 24,518 to 31,430, and the number of people exposed to at least a high level of ground noise (i.e. 65 dB Lden or above) is forecast to increase from 3 to 6.

The EIAR states that comparing the 2025 Apron 5H scenario with the 2025 Baseline, the number of people exposed to at least a low level of ground noise (i.e. 45 dB Lnight or above) is forecast to increase from 578 to 10,623, and the number of people exposed to at least a high level of ground noise (i.e. 55 dB Lnight or above) is forecast to increase from 6 to 35.

The EHS acknowledges that the increase in people exposed to 50 dB Lden and 45 dB Lnight may result in adverse health effects as outlined in The World Health Organisation's Environmental Noise Guidelines 2018. Due to this the EHS feels that the mitigation measures proposed must be reflected in these increased numbers in order to reduce as much as possible the number of people exposed. The EHS also feels that the WHO levels of 45 dB Lden and 40 dB Lnight should be used when assessing eligibility for schemes such as the sound insulation improvement works.

Land/Soil including groundwater:
The EHS have assessed chapter 18 which looks at the likely significant effects on Land and Soil impacts as a result of the proposed Relevant. The EHS is satisfied that the proposed development will not have any significant effect on land and soils.

Conclusion:
The EHS makes the following observations in relation to this proposed development:

- **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 if of the opinion that The World Health Organisation's Environmental Noise Guidelines of 45dB Lden and 40 dB Lnight should have been used for ground noise assessments.**

All correspondence or any queries with regard to this report, including acknowledgement of this report, should be forwarded to Ms. Geraldine O Callaghan, Principal Environmental Health Officer, at the above address

Geraldine O Callaghan
Principal Environmental Health Officer

Thomas Mangan
Environmental Health Officer
Environment OU

APPENDIX B: **Environmental Health Submission Feb 2022.pdf**

An tOifig Náisiúnta um Sláinte Chomhshaoil
Feidhmeannacht na Seirbhíse Sláinte,
Urlár 2, Teach na Darach, Ascaill na Teile
Páirc na Mílaoise, An Nás, Co. Chill Dara.

National Office for Environmental Health Services
2nd Floor, Oak House, Lime Tree Avenue
Millennium Park, Naas, Co. Kildare
Eircode: W91KDC2

Clarification on the content of this submission should be made to:

Andrew.sulley@hse.ie

Planning Register Reference Number:
F20A/0668
Date 24th February 2022

The relevant action pursuant to Section 34C (1) (a), seeks:

To amend condition no. 3(d) of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19). Condition 3(d) and the exceptions at the end of Condition 3 state the following: '3(d). Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports.

Permission is being sought to amend the above condition so that it reads: 'Runway 10L-28R shall not be used for take-off or landing between 0000 hours and 0559 hours except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports or where Runway 10L-28R length is required for a specific aircraft type.'

The relevant action also is:

To replace condition no. 5 of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19) which provides as follows: 5.On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007.
Reason: To control the frequency of night flights at the airport so as to protect residential amenity having regard to the information submitted concerning future night time use of the existing parallel runway'.
With the following:

'A noise quota system is proposed for night time noise at the airport. The airport shall be subject to an annual noise quota of 7990 between the hours of 2330hrs and 0600hrs'.

In addition to the proposed night time noise quota, the relevant action also proposes the following noise mitigation measures:

A noise insulation grant scheme for eligible dwellings within specific night noise contours

A detailed Noise Monitoring Framework to monitor the noise performance with results to be reported annually to the Aircraft Noise Competent Authority (ANCA), in compliance with the Aircraft Noise (Dublin Airport) Regulation Act 2019

The following are the observations of the Environmental Health Service (EHS)

Draft Regulatory Decision
Condition 1

The rationale given is not a rationale for revoking condition 5 of the current planning permission, but is a rationale for the Noise Quota Scheme proposed.

The Draft Regulatory Decision should give a clear rationale for revoking the existing planning condition 5.

Condition 2
The rationale given is not for amending the existing conditions is not given. The reasons given are for the new controls, which are less stringent than existing.

The Draft Regulatory Decision should give a clear rationale for amending the existing planning condition 3.

As the existing Planning Conditions are in place to protect public health, it is important that the reasons for a change in this protection are clearly stated. In its current format the Draft Regulatory Decisions states reasons for the new conditions but not reasons why they should be changed.
If the rationale is from the supporting report, then it should be stated and referenced as to which part of the 'balanced' approach has influenced the decisions that have resulted in the Draft Regulatory Decisions.

From the report:

> The ultimate responsibility for deciding whether a planning application for development at Dublin Airport should be granted or refused is the function of the planning authority of FCC. ANCA can only direct refusal of planning permission if inadequate provision has been made to deal with any noise problem identified and associated with the proposed development. Otherwise, it must identify the operating restrictions and/or noise mitigation measures that should be included in any decision to grant permission by FCC.

The operating restrictions already exist and the Draft Regulatory Decision is to revoke and amend them, there should therefore be a clear rationale for this and clear evidence that the mitigation measures proposed will ensure there is not a diminishing of health protection that is compliant with the existing operating restrictions.

The EHS has made previous submissions to the Planning Authority with regard to the application on the 27th January 2021 and the 29th September 2021 as follows:

The Conditions 3(d) and 5 were put in place to protect public health so if the planning authority are going to increase the hours of operation they must ensure all who are significantly impacted have the opportunity of mitigation.

Reference is made to the WHO Noise Guidance 2018 for European Regions. Section 3.3 Aircraft Noise
https://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2018/environmental-noise-guidelines-for-the-european-region-2018

3.3 Aircraft noise

Recommendations

For average noise exposure, the GDG **strongly** recommends reducing noise levels produced by aircraft below **45 dB** L_{den}, as aircraft noise above this level is associated with adverse health effects.

For night noise exposure, the GDG **strongly** recommends reducing noise levels produced by aircraft during night time below **40 dB** L_{night}, as aircraft noise above this level is associated with adverse effects on sleep.

To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the GDG recommends implementing suitable changes in infrastructure.

It should be noted that this is a strong recommendation based on a complete review of the health research around aircraft noise.

Table 26 of the Guidance summarises the adverse health outcomes from exposure to excessive aircraft noise.

It is therefore important that the noise mitigation measures are made available to all parties that are significantly impacted by the proposal to ensure the protection of health.



Andrew Sulley
Senior Environmental Health Officer

APPENDIX C: **HSE2.pdf**

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Environmental Health

Unit 4 & 5, Nexus Building,

Block 6A, Blanchardstown Corporate Park,

Dublin 15

Tel +353 (0)1 8976140

E-mail: Geraldine.ocallaghan3@hse.ie

29th September 2021

Our reference:	1516
Licence Type:	Planning Application
Name and address of applicant:	DAA PLC.
Location of facility:	Dublin Airport, Co. Dublin
Reference No:	F20A/0668
EIS/EIAR submitted:	Yes
Planning Authority to whom EIS/EIAR has been submitted:	Fingal County Council

This report only comments on Environmental Health impacts of the licence application.

Environmental Health Submission

EHS Ref: 1516

Planning Ref: F20A/0668 Fingal County Council

Description of Project:
The amendment of the operating restriction set out in condition no. 3(d) and the replacement of the operating restriction in condition no. 5 of the North Runway Planning Permission, as well as proposing new noise mitigation measures.

The proposed Relevant Action, if permitted, would remove the numerical cap on the average number of flights permitted between the hours of 23:00 and 07:00 that is due to come into effect in accordance with the North Runway Planning Permission, replacing it with an annual night-time noise quota between 23:30 and 06:00 and also to allow flights to take off from and/or land on the North Runway (Runway 10L 28R) for an additional two hours i.e. 23:00 to 00:00 and 06:00 to 07:00. Overall, this would allow for an increase in the number of flights taking off and/or landing at Dublin Airport between 23:00 and 07:00 over and above the number stipulated in condition no. 5 of the North Runway Planning Permission, in accordance with the annual night-time noise quota.

Conclusion:
The EHS makes the following observations in relation to this proposed development:

- **The Conditions 3(d) and 5 were put in place to protect public health so if the planning authority are going to increase the hours of operation they must ensure all who are significantly impacted have the opportunity of mitigation.**

Reference is made to our previous submission 27th January 2021 where we made the following observations:

- **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.**

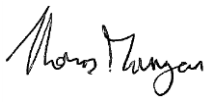
- **The EHS if of the opinion that The World Health Organisation's Environmental Noise Guidelines of 45dB Lden and 40 dB Lnight should have been used for ground noise assessments.**

All correspondence or any queries with regard to this report, including acknowledgement of this report, should be forwarded to Ms. Geraldine O Callaghan, Principal Environmental Health Officer, at the above address

Yours sincerely



Geraldine O Callaghan
Principal Environmental Health Officer



Thomas Mangan
Environmental Health Officer
Environment OU

APPENDIX D: **HSE-DeptOfPublicHealth.pdf**

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Department of Public Health
HSE-East
Dr. Steevens' Hospital,
Dublin 8
Tel. 01 635 2145
Fax 01 635 2103

Date: 01 /02/2021

RE: F20A/0668 - application under Section 34 of the Planning and Development Act 2000

To: Fingal County Council Planning Authority

Dear Sir/Madam,

I am writing to you in relation to application F20A/0668 received by Fingal County Council Planning Authority.

Issue: Proposed changes to North Runway Planning Permission

Dublin Airport is proposing an amendment of the operating restriction set out in condition no. 3(d) and replacement of the operating restriction in condition no. 5 of the North Runway Planning Permission as well as proposing new noise mitigation measures. Proposed action would be:

- To remove the numerical cap on the number of flights permitted between the hours of 23.00 and 07.00 daily and replace it with an annual night-time noise quota between 23.30 and 06.00.
- To allow flights to take off from and/or land on the North Runway for an additional 2 hours - 23.00 hours to 24.00 hours, and 06.00 hours to 07.00 hours.
- Overall, this would lead to an increase in the number of flights taking off and/or landing at Dublin Airport between 23.00 and 07.00 over and above the number stipulated in condition no. 5 of the North Runway Planning Permission.

The proposed noise quota system:
"A noise quota system is proposed for night time noise at the airport. The airport shall be subject to an annual noise quota of 7990 between the hours 2330 and 0600hrs"

Proposed noise mitigation measures:

- A noise insulation grant scheme for eligible dwellings within specific night noise contours.
- A detailed Noise Monitoring Framework to monitor the noise performance with result to be reported annually to the Aircraft Noise Competent Authority, in compliance with the Aircraft Noise Regulation Act 2019.

Potential Heatlh and wellbeing impacts

Noise is an important Public Health issues, that can have negative impacts on human health and well-being (1). Environmental noise is among the top environmental risks to physical and mental health, and is associated with a substantial burden of disease in Europe (1). There is a plethora of evidence that sleep is a biological necessity, and that disturbed sleep is associated with a number of health problems (2). Noise disturbs sleeps by a number of pathways, and even at very low levels of noise, physiological reactions can be measured, such as increased heart rate, body movement and arousals (2). Therefore, the proposed changes to the North Runway Planning Permission may have significant consequences for Public Health in the surrounding areas.

Noise, sleep and human health

Insufficient sleep and sleep disorders impact daily functioning, mood, cognition and cardiovascular health outcomes such as obesity, high blood pressure, diabetes, stroke and heart attack (3). Prevalence of poor sleep health is high, particularly amongst vulnerable populations such as racial/ethnic minorities and individuals of lower socioeconomic status (3). Many factors contribute to this high prevalence, including environmental factors. Noise has been shown to fragment sleep, reduce sleep continuity and reduce total sleep time (2). It is therefore important to identify and target determinants of sleep health, including environmental factors. Continuous exposure to aircraft noise increases the frequency of waking up during sleep and decreases slow-wave sleep (also known as deep sleep) (4).

The auditory system constantly scans the environment for potential threats, and humans perceive, evaluate and react to environmental sounds even when asleep (5). During sleep, night noise can be either intermittent (that is discrete noise events rather than constant background noise), or single noise event (5). When noise is accompanied by vibrations the combination of noise and vibration induces higher degrees of sleep disturbance than noise alone and other factors such as situational factors (depth of sleep phase, background noise level) and individual factors (noise sensitivity), contribute to whether or not noise will disturb sleep (5). Repeated noise-induced arousals lead to impaired sleep quality and recuperation, delayed sleep onset and early wakening, less deep and REM sleep, and more time spent awake and in superficial sleep stages (5). Noise may also prevent people from falling asleep again once woken. It is currently unclear how many additional noise-induced awakenings are acceptable and without consequence for sleep and health (5).

When sleep is permanently disturbed and it becomes a sleep disorder, it is classified in the International Classification of Sleep Disorders as “environmental sleep disorder” (2). Noise-induced sleep disturbance is an example of an environmental sleep disorder, which is a sleep disorder that causes complaints or either insomnia or daytime fatigue and somnolence (2). The exact prevalence of environmental sleep disorders is not known (2).

It is generally accepted that insufficient sleep and sleep loss has a great influence on metabolic and endocrine functions, as well as on inflammatory markers, and it contributes to cardiovascular risk (2). C-reactive protein, an acute inflammatory marker, a predictor or strokes and heart attacks has been shown to linearly increase with total and/or partial sleep loss (2). Leptin, which is involved in glucose regulation and weight control, decreases with sleep loss thus increasing appetite and predisposing to weight gain, impaired glucose tolerance (risk of diabetes) and impaired host response (2). Sleep loss also effects neurobehavioural function, especially neurocognitive

performance (2). Noise also activates the stress response, and long-term noise exposures may lead, in persons liable to be stressed by noise, to permanently increased cortisol concentration above the normal range (2). Increased risk of cardiovascular disease is connected with stress. There is considerable evidence for a relationship between sleep and the immune system, and the immune response may be impacted by environmental noise during sleep (2).

Disturbed sleep leads to daytime sleepiness in 40% of affected subjects. As well as the potential health implications, daytime sleepiness interferes with work and social function and can have consequences including cognitive problems, motor vehicle accidents, poor job performance and reduced productivity (2).

Time studies have indicated that the average amount of time people are in bed is 7.5 hours; therefore the average sleeping time would be somewhat shorter. There is considerable variation in sleeping time due to factors such as age and genetics (2). It is therefore recommended that for these reasons, a fixed interval of 8 hours is a minimal choice for night time protection, this protects about 50% of the population (2). It would take a 10 hour period to protect 80% (2).

Aircraft Noise and human health

The WHO Noise Guidelines for Europe identify the following potential adverse health outcomes associated with aircraft noise (1):

1) Ischaemic Heart Disease (IHD):
   Evidence suggests a dose-response effect for increased Relative Risk (RR) between incidence of IHD in areas with exposure to aircraft noise, and increased RR in mortality due to IHD associated with aircraft noise.
2) Hypertension:
   Evidence suggests an inconsistent relationship between aircraft noise and hypertension.
3) Stroke:
   Evidence suggests a dose-response effect for increased RR of stroke in individuals with exposure to aircraft noise.
4) Children's blood pressure:
   Results of studies examining relationship between aircraft noise and children's blood pressure were inconsistent.
5) Annoyance:
   Strong evidence exists to prove the association between aircraft noise and annoyance. Evidence exists for an increase in %HA (%Highly Annoyed) per 10dB increase in sound exposure.
6) Cognitive Impairment:
   Evidence exists for an association between aircraft noise and reading and oral comprehension, as well as an association between aircraft noise and children with poorer performance on standardised assessment, and worse long term memory. No association was found between aircraft noise and executive function.
7) Hearing and tinnitus:
   No evidence was available for analysis
8) Sleep disturbance:
   Evidence exists for an association between aircraft noise and self-reported sleep disturbance as well as polysomnography outcomes.

Studies assessing interventions involving opening and closing runways, and subsequent changes in flight paths, showed that change, increase or removal of over-flights resulted in statistically significant changes in annoyance levels of residents. Studies assessing sleep disturbance found that the percentage of sleep disturbance changed in association with the change in noise level exposure caused by flight path adaptations (1).

The report strongly recommends reducing noise levels produced by aircraft below 45dB L_{den}, and reducing night noise levels produced by aircraft to below 40dB L_{den}, as aircraft noise above this level is associated with adverse effects on sleep (1). To reduce adverse health effects, the group strongly recommends that suitable measures to reduce noise exposure from aircraft in the population exposed to levels above these guideline values are implemented (1).

Potential Health Implications of proposed changes:
The changes proposed remove the numerical cap on flights between 23.00 and 07.00, and replaces it with a noise quota for flights between 23.30 and 06.00. It would also allow flights to take off from and land on the North Runway for an additional 2 hours - 23.00 hours to 24.00 hours, and 06.00 hours to 07.00 hours. This would effectively increase the number of flights taking off and landing between 23.00 and 07.00, and reduce the protected period of time during which flight restrictions exist in current permission. Sleep is an important biological process for overall health, and noise has been shown to disturb sleep. In addition to sleep disturbance, aircraft noise is associated with a number of adverse health outcomes.

Sleep time of 8 hours is thought to protect 50% of the population, therefore reduction of the restricted flight times to a 6 hour window between midnight and 6am may have an adverse effect on health outcomes. Proposed noise mitigation measures are welcomed, however consideration should be given to whether these are sufficient to reduce night noise levels to recommended levels, especially in the summer months when air traffic is increased and windows are more likely to be open, modifying insulation effects. The current WHO recommendation is to reduce noise levels to below 45dB L_{den} from 55 dB L_{den} for the hours between 0700 and 2300 and to reduce to below 40db L_{night} from 40dB -45dB L_{night} for night time hours between 2300 and 0700 (1). This is a factor to consider in relation to the noise level contour, currently proposed by DAA, at night time noise levels of > 55dB L_{night}, to qualify for noise abatement measures for homes in the vicinity of Dublin Airport (6). In the case of Vienna airport, homes in the vicinity with noise levels >54 dB during the day and >45dB at night are eligible for assistance towards soundproofing (7).

Use of an annual noise quota in replacement of a numerical cap on flights during restricted hours, would increase the number of flights between these hours, thus potentially increasing the number of additional arousals for residents in the surrounding area leading overall increase in sleep disturbance. The period between 6am and 7am is the busiest period in the day at Dublin Airport (8). Excluding that period of time from restrictions such as a numerical cap or night noise quota will potentially increase substantially both the night time and the cumulative daily noise exposure for surrounding communities.

<u>Conclusion</u>
The proposed changes may have the cumulative effect of increasing sleep disturbance in residents in the surrounding area, and increasing overall daily noise exposure despite proposed mitigation measures, with potential adverse health outcomes.

Kind regards,



_____

Dr Ruth McDermott
Specialist in Public Health Medicine
MCRN 16416

Submission prepared by: Dr Triona McNicholas, Specialist Registrar in Public Health Medicine, Dr Lucinda Ryan, Senior Medical Officer in Public Health, and Dr Ruth McDermott, Specialist in Public Health Medicine

References

1. World Health Organization. Environmental noise guidelines for the European region. 2018.
2. World Health Organisation. Night noise guidelines for Europe. WHO Regional Office Europe, 2009.
3. Johnson DA, Billings ME, Hale L. Environmental determinants of insufficient sleep and sleep disorders: implications for population health. Current epidemiology reports 2018;5:61-69.
4. Kwak KM, Ju Y-S, Kwon Y-J et al. The effect of aircraft noise on sleep disturbance among the residents near a civilian airport: a cross-sectional study. Annals of occupational and environmental medicine 2016;28:1-10.
5. Basner M, McGuire S. WHO environmental noise guidelines for the European region: a systematic review on environmental noise and effects on sleep. Int J Environ Res Public Health 2018;15:519.
6. Dublin Airport. North Runway Relevant Action Application Update. Dublin, 2020.
7. Elliff T; Cremaschi, M; Huck Violaine. Impact of aircraft noise pollution on residents of large cities. In: Policy Department for Citizens' Rights and Constitutional Affairs EP, editor, 2020.
8. Dublin Airport Authority. Building for the future. Dublin, Ireland, 2018.

APPENDIX E: **Fingal-EnvironmentalHealth.pdf**

FINGAL COUNTY COUNCIL INTERNAL CONSULTEE

PLANNING REPORT

Report of Environmental Health Air & Noise Unit

Date: 15 October, 2021

Register Ref: F20A/0668(A.I.)

Area: Swords

Development: A proposed development comprising the taking of a 'relevant action' only within the meaning of Section 34C of the Planning and Development Act 2000, as amended, at Dublin Airport, Co. Dublin, in the townlands of Collinstown, Toberbunny, Commons, Cloghran, Corballis, Coultry, Portmellick, Harristown, Shanganhill, Sandyhill, Huntstown, Pickardstown, Dunbro, Millhead, Kingstown, Barberstown, Forrest Great, Forrest Little and Rock on a site of c. 580 ha.

The proposed relevant action relates to the night-time use of the runway system at Dublin Airport. It involves the amendment of the operating restriction set out in condition no. 3(d) and the replacement of the operating restriction in condition no. 5 of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No. PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19), as well as proposing new noise mitigation measures. Conditions no. 3(d) and 5 have not yet come into effect or operation, as the construction of the North Runway on foot of the North Runway Planning Permission is ongoing. The proposed relevant action, if permitted, would be to remove the numerical cap on the number of flights permitted between the hours of 11pm and 7am daily that is due to come into effect in accordance with the North Runway Planning Permission and to replace it with an annual night-time noise quota between the hours of 11.30pm and 6am and also to allow flights to take off from and/or land on the North Runway (Runway 10L 28R) for an additional 2 hours i.e. 2300 hrs to 2400hrs and 0600 hrs to 0700 hrs. Overall, this would allow for an increase in the number of flights taking off and/or landing at Dublin Airport between 2300 hrs and 0700 hrs over and above the number stipulated in condition no. 5 of the North Runway Planning Permission, in accordance with the annual night time noise quota.

The relevant action pursuant to Section 34C (1) (a) is: To amend condition no. 3(d) of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19). Condition 3(d) and the exceptions at the end of Condition 3 state the following: '3(d). Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports.' Permission is being sought to amend the above condition so that it reads: 'Runway 10L-28R shall not be used for take-off or landing between 0000 hours and 0559 hours except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather,

technical faults in air traffic control systems or declared emergencies at other airports or where Runway 10L-28R length is required for a specific aircraft type.' The net effect of the proposed change, if permitted, would change the normal operating hours of the North Runway from the 0700hrs to 2300 hrs to 0600 hrs to 0000 hrs. The relevant action also is: To replace condition no. 5 of the North Runway Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19) which provides as follows: 5. On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007. Reason: To control the frequency of night flights at the airport so as to protect residential amenity having regard to the information submitted concerning future night time use of the existing parallel runway'. With the following: A noise quota system is proposed for night time noise at the airport. The airport shall be subject to an annual noise quota of 7990 between the hours of 2330hrs and 0600hrs. In addition to the proposed night time noise quota, the relevant action also proposes the following noise mitigation measures: - A noise insulation grant scheme for eligible dwellings within specific night noise contours; - A detailed Noise Monitoring Framework to monitor the noise performance with results to be reported annually to the Aircraft Noise Competent Authority (ANCA), in compliance with the Aircraft Noise (Dublin Airport) Regulation Act 2019. The proposed relevant action does not seek any amendment of conditions of the North Runway Planning Permission governing the general operation of the runway system (i.e., conditions which are not specific to nighttime use, namely conditions no. 3 (a), 3(b), 3(c) and 4 of the North Runway Planning Permission) or any amendment of permitted annual passenger capacity of the Terminals at Dublin Airport. Condition no. 3 of the Terminal 2 Planning Permission (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No. PL06F.220670) and condition no. 2 of the Terminal 1 Extension Planning Permission (Fingal County Council Reg. Ref. No. F06A/1843; ABP Ref. No. PL06F.223469) provide that the combined capacity of Terminal 1 and Terminal 2 together shall not exceed 32 million passengers per annum. The planning application will be subject to an assessment by the Aircraft Noise Competent Authority in accordance with the Aircraft Noise (Dublin Airport) Regulations Act 2019 and Regulation (EU) No 598/2014. The planning application is accompanied by information provided for the purposes of such assessment. An Environmental Impact Assessment Report will be submitted with the planning application. The planning application and Environmental Impact Assessment Report may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority during its public opening hours of 9.30 - 16.30 (Monday – Friday) at Fingal County Council, Fingal County Hall, Main Street, Swords, Fingal, Co. Dublin.

AI received 13/09/21
AI deemed significant - awaiting revised public notices **

Location: Dublin Airport, Co. Dublin.

Applicant : daa plc

Application Type : Permission

Planning Officer : Ian Campbell

Date Received : 13 September, 2021

With regard to the application above, the EIAR submitted has identified that a significant portion of people will be exposed to high levels of noise.

Noise level exposure – Proposed scenario v's Permitted scenario:

2022- 4% more people are likely to be highly annoyed by the 2022 proposed scenario than that of permitted scenario for 2022.

2022 -2% more people are likely to be highly sleep deprived by the 2022 proposed scenario than that of the 2022 permitted scenario.

2025-24% more people are likely to be highly annoyed by the 2025 proposed scenario than that of the 2025 permitted scenario.

2025- 65% more people are likely to be highly sleep deprived by the 2025 proposed scenario than that of the 2025 permitted scenario.

2035-19% more people are likely to be highly annoyed by the 2035 proposed scenario than that of the 2035 permitted scenario.

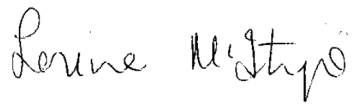
2035-65% more people are likely to be highly sleep deprived by the 2025 proposed scenario than that of the 2025 permitted scenario.

The 2018 WHO guidelines strongly recommend reducing night noise exposure levels produced by aircraft during night time to below 40dB Lnight. Aircraft noise above these levels are associated with adverse health effects. The DAA have modeled the night time insulation programme on exposure levels of 55dB which leaves a significant proportion of people exposed to night time levels above the 40dB exposure level recommended by WHO.

Ground noise exposure levels are lower than that of the air craft noise exposure, however there are a significant number of people effected by exposure to noise levels greater than 45dB. Pro PG states that where existing noise sensitive locations already experience high noise levels a development that is expected to cause even a small increase in the overall noise may result in a significant adverse effect occurring even though little or no change in behavior would be likely to occur.

The removal of the operating restriction set out in condition no. 3(d) and the replacement of the operating restriction in condition no. 5 of the North Runway Planning Permission to remove the numerical cap on the number of flights permitted between the hours of 11pm and 7am daily that is due to come into effect in accordance with the North Runway Planning Permission and to replace it with an annual night-time noise quota between the hours of 11.30pm and 6am and also to allow flights to take off from and/or land on the North Runway (Runway 10L 28R) for an additional 2 hours i.e. 2300 hrs to 2400hrs and 0600 hrs to 0700 hrs will have an adverse effect on a large percentage of the population.

It is recommended that consideration is given to the proposed noise mitigation measures i.e. to provide an extension of the noise insulation schemes to include the 2018 WHO Environmental noise guidelines.



_____

Environmental Health Officer

APPENDIX F: **HSE Submission re Proposed Material Alterations Dec 22.pdf**

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

National Office for Environmental Health Services
2nd Floor, Oak House,
Lime Tree Avenue
Millennium Park,
Naas,
Co. Kildare
E: ehnationaloffice@hse.ie

22 December 2022

Development Plan Team,
Planning and Strategic Infrastructure Department,
Fingal County Council,
County Hall,
Main Street,
Swords,
Co. Dublin,

EHIS Ref No: 2833

Re: Proposed Material Alterations to Draft Fingal County Development Plan 2023 – 2029

Dear Sir/Madam,

I refer to the proposed material alterations to the Draft Fingal County Development Plan 2023-2029, the following HSE departments were made aware of the consultation request on 11 November 2022.

- Emergency Planning – Brendan Lawlor
- Estates – Helen Maher/Stephen Murphy
- Director of National Health Protection – Eamonn O' Moore
- CHO – Mellany McLoone

The Environmental Health Service made a submission regarding the proposed Fingal Development plan on 5th May 2021. I have examined the proposed material alterations and have no observations to add to the submission made in May 2021.

The HSE Public Health Area A Department have made a submission regarding the proposed material alterations to the Draft Fingal County Development Plan 2023-2029, the submission is attached below for your consideration.

If you have any queries regarding the report, please contact me.

Yours Sincerely,

Environmental Health Officer,
Environment/Climate Change Network Support Unit

HSE Public Health, Area A
(Cavan, Louth, Meath, Monaghan & North Dublin)

FSS Sláinte Poiblí, Ceantar A
(An Cabhán, An Lú, An Mhí, An Muineachán agus Baile Átha Cliath Thuaidh)
T: +353 46 928 2700 | F: +353 46 928 2744 | E: PublicHealth.AreaA@hse.ie

For Cavan, Louth, Meath & Monaghan:
Unit H/I, Kells Business Park, | Cavan Road | Kells | Co Meath A82 W2P3
Aonad H/I Páirc Ghnó Cheanannais | Bóthar an Chabháin | Ceanannas | Co na Mí A82 W2P3

For North Dublin:
Dr. Steevens' Hospital | Dublin 8 | D08 W2A8
Ospidéal Dr. Steevens' | Baile Átha Cliath 8 | D08 W2A8

TO: Mr Derek Bauer
Principal Environmental Health Officer

FROM: Dr Paul Mullane
Specialist in Public Health Medicine

RE: ***EHIS Ref Number: 2833 - Public Consultation on the Proposed Material Alterations of Fingal County Development Plan 2023-2029***

DATE: 20th December 2022

Thank you for the opportunity for HSE Public Health, Area A (covering counties Cavan, Louth, Meath, Monaghan and North Dublin) to provide a submission on the Proposed Material Alterations of the Fingal County Development Plan 2023-2029.

The following submission represents the views of HSE Public Health, Area A, and does not necessarily reflect the views of the population living in the area. Please refer to Appendix A for more information on HSE Public Health, Area A.

Dr Paul Mullane will be the primary contact for this submission, if further input is required from HSE Public Health, Area A.

Yours sincerely,

Dr Ciara Carroll
MB BCh BAO MSc DOWH
SpR in Public Health Medicine
MCRN: 414987

Dr Muireann De Paor
MB BCh BAO MICGP, PhD
SpR in Public Health Medicine
MCRN: 246473

Dr Paul Mullane
MB BCh BAO MRCP MPH MFPHMI
Specialist in Public Health Medicine
MCRN: 400068

INTRODUCTION

Thank you for the opportunity for HSE Public Health, Area A to make a submission on the ***Proposed Material Alterations of the Fingal County Development Plan 2023-2029.***

HSE Public Health, Area A commends Fingal County Council on the progress made thus far on the ***Fingal County Development Plan 2023-2029.***

In this submission, we will focus on the proposed amendments to the Draft Development Plan Written Statement for the chapters listed below. We have arranged our response in accordance with the reference number(s) as shown in the Draft Development Plan document (except Chapter 5 and 6 where we provide general commentary).

CHAPTER 2: Planning for Growth – Core Strategy, Settlement Strategy
CHAPTER 3: Sustainable Placemaking and Quality Homes
CHAPTER 4: Community Infrastructure and Open Space
CHAPTER 5: Climate Action
CHAPTER 6: Connectivity and Movement
CHAPTER 8: Dublin Airport

CHAPTER 2: PLANNING FOR GROWTH – CORE STRATEGY, SETTLEMENT STRATEGY

PA CH 2.1: Section 2.2.11 The Core Strategy

HSE Public Health, Area A recognises the existing extensive network of pedestrian and cycle routes serving zoned lands in the area and support the further expansion of the pedestrian and cycle network, in keeping with the National Activity Plan for Ireland[1]. Cycling and walking should be encouraged to promote physical activity and health[2], cardiac and respiratory health[2], and mental health[3]. Cycling has been associated with additional benefits such as reduced air and noise pollution[4], increased social cohesion and interaction[5], decreased road danger for cyclists and motorists[5], and enhanced accessibility to businesses[6].

[1] Department of Health (DoH). Get Ireland Active! National Physical Activity Plan for Ireland. 2016. Department of Health, Dublin: Ireland. 2016. Available from: https://assets.gov.ie/7563/23f51643fd1d4ad7abf529e58c8d8041.pdf (Accessed Dec 16 2022).
[2] De Hartog JJ, Boogaard H, Nijland H, Hoek G. Do the Health Benefits of Cycling Outweigh the Risks? Environmental Health Perspectives. 2010; 118(8): 1109-1116. Doi: 10.1289/ehp.0901747
[3] Kelly P, Williamson C, Niven A, Hunter R, Mutrie N, & Richards J. Walking on sunshine: scoping review of the evidence for walking and mental health. British Journal of Sports Medicine. 2018; 52 (12): 800 - 806.
[4] World Health Organisation (WHO), Regional Office for Europe. Implementation Framework for Phase VII (2019 - 2024) of the WHO European Healthy Cities Network: Goals, Requirements and Strategic Approaches. World Health Organisation. 2019. Available at: https://www.euro.who.int/__data/assets/pdf_file/0020/400277/04-FINAL-Phase-VII-implementation-framework_ENG.PDF (Accessed 16 Dec 2022)
[5] Marshall WE, Ferenchak NN. Why cities with high bicycling rates are safer for all road users. Journal of Transport & Health. 2019; Vol 13: 100539.
[6] Lee A, March A. Recognising the economic role of bikes: sharing parking in Lygon Street, Carlton. Australian Planner. 2010; 47 (2): 85-93. DOI: 10.1080/07293681003767785

PA CH 2.2: Section 2.2.12 Strategic Long-Term Reserve

HSE Public Health, Area A supports the development of the Hamilton Way to promote walking. The planning and design of this walkway should involve the local community, be implemented in a way that reduces crime and fear of crime, and promote age-friendly and equitable access, to increase the use of this space[26].

The opportunity to develop the closed landfill into a regional park is recognised as an opportunity to strengthen access to good quality green space, and would ideally be integrated with other facilities such as schools and residential care homes[26]. However, due consideration would need to be given to the potential health risks that may be associated with closed landfills, such as the release of methane gas and the presence of inorganic and organic contaminants in soil[7].

The capacity for up to 7,000 residential units identified in the Dunsink Feasibility Study is recognised by HSE Public Health, Area A as a potential facilitator of improved access to housing in the Fingal region by increasing new housing supply. In developing this area, we would highlight the following measures that may be instituted to promote health in the area:

- Adequate and sustained access to affordable housing to prevent negative mental health impacts[8] and reduce the potential for stress associated with insecure housing[9]. Affordable housing may also increase the income available to residents to spend on healthy food and mitigate against food insecurity[10].
- Residential areas should promote physical activity through the provision of walking and cycling infrastructure and access to public transport [26], and the provision of open green spaces which may play a particularly important role for certain populations, such as women and the elderly[11].

PA CH 2.3: Section 2.2 Core Strategy

HSE Public Health, Area A supports the Council's engagement with social and affordable housing delivery. We recommend that social and affordable housing be integrated with other forms of housing, to avoid the potential negative health effects associated with residential segregation by income. These include obesity, cancer, poorer pregnancy outcomes and increased mortality[12].

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[7] Hard HR, Brusseau M, Ramirez-Andreotta M. Assessing the feasibility of using a closed landfill for agricultural graze land. Environmental Monitoring and Assessment. 2019;191(7):458. doi: 10.1007/s10661-019-7579-9.

[8] Baker E, Lester L, Mason K, Bentley R. Mental health and prolonged exposure to unaffordable housing: a longitudinal analysis. Social Psychiatry and Psychiatric Epidemiology. 2020;55(6):715-721. doi: 10.1007/s00127-020-01849-1

[9] Rolfe S, Garnham L, Godwin J, Seaman P, Donaldson C. Housing as a social determinant of health and wellbeing: developing an empirically-informed realist theoretical framework. BMC Public Health. 2020;20,1138. doi: 10.1186/s12889-020-09224-0

[10] Fafard St-Germain AA, Tarasuk V. Homeownership status and risk of food insecurity: examining the role of housing debt, housing expenditure and housing asset using a cross-sectional population-based survey of Canadian households. International Journal for Equity in Health. 2020;19(1):5. doi: 10.1186/s12939-019-1114-z

[11] Wang H, Dai X, Wu J, Wu X, Nie X. Influence of urban green open space on residents' physical activity in China. BMC Public Health. 2019;19(1):1093. Published 2019 Aug 13. doi:10.1186/s12889-019-7416-7

[12] Kramer MR. 'Residential Segregation and Health'. In: Kawachi I, Berkman LF, eds. Neighborhoods and Health. New York: Oxford Academic Press. 2018. doi: 10.1093/oso/9780190843496.003.0012

PA CH 2.24: Section 2.7.2 Role of Each Settlement

HSE Public Health, Area A supports the development of a multi-functional green infrastructure corridor between Dunsink and Tolka Valley Park. We reiterate the importance of developing high quality, safe infrastructure that incorporates the principles of universal, age-friendly and equitable access to increase health, environmental and climate benefits[26].

PA CH 2.26: Section 2.7.2 Role of Each Settlement

HSE Public Health, Area A supports the provision of a coastal cycleway between Malahide and Swords along the Broadmeadow Estuary. To ensure that the potential for health, environmental and climate benefits associated with this cycleway is maximised, we recommend integrating it with cycling, walking and public transport networks[26].

CHAPTER 3: SUSTAINABLE PLACEMAKING AND QUALITY HOMES

PA CH 3.2: Section 3.5.1 Healthy Placemaking

HSE Public Health, Area A commends the health promoting, inclusive and sustainable approach to development outlined, and welcomes the prioritisation of sustainable, active transport modes to meet community requirements and provide access to local services.

PA CH 3.5: Section 3.5.2 Successful Public Realms including Town Centre First

HSE Public Health, Area A commends the addition of climate resilient and pollinator friendly planting to enhance the visual amenity of town and village centres, with the additional potential benefits of improved mental health and air quality[13].

PA CH 3.6: Section 3.5.3 Core Strategy and Housing Growth

HSE Public Health, Area A agrees that active travel options should also be considered while liaising with Transport Infrastructure Ireland to ensure public transport options to and from new developments to local amenities such as shops and libraries. We suggest that this should include options to enable access to other public services, particularly educational facilities and recreational and leisure facilities, in keeping with WHO Guidelines[26].

PA CH 3.7: Section 3.5.4 Ensuring Housing Supply

HSE Public Health, Area A welcomes the development of active travel links to access public transport, schools, amenities and neighbouring communities prior to occupation of residential units.

PA CH 3.8: Section 3.5.6 Social Inclusion

HSE Public Health, Area A recognises the value associated with the appointment of a dedicated Access Officer, both to co-ordinate disability issues across departments, and to advocate for those with disabilities.

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[13] Garibaldi, LA, Gomez-Carella, DS, Nabaes-Jodar, DN, Smith, MR, Timberlake, TP, Myers, SS. Exploring connections between pollinator health and human health. Philosophical Transactions of the Royal Society B: Biological Sciences. 2022;377(1853).

PA CH 3.9: Section 3.5.6 Social Inclusion

HSE Public Health, Area A supports the inclusion of an accessibility audit as part of urban framework plans and welcomes the proposed engagement with disability groups and local organisations.

PA CH 3.22: Section 3.5.15 Housing in Rural Fingal

HSE Public Health, Area A welcomes the recognition of the need to develop appropriate accommodation for seasonal or temporary workers where an unmet need for this exists. When developing new residential accommodation for seasonal farm workers, where possible single persons should be accommodated in single occupancy rooms to prevent overcrowding as defined by European standards[14]. Overcrowding in houses has been associated with poor mental health[15] and increased spread of infectious diseases[16,17].

The transport arrangements outlined to ensure ease of access for seasonal or temporary workers to nearby towns and villages are recognised by HSE Public Health, Area A as an opportunity to prevent the social isolation of workers, particularly when they may already be isolated as a result of their work, financial situation or due to language barriers[18]. Efforts should be made to ensure that accommodation is built as close as possible to cycling and pedestrian infrastructure to ensure that towns and villages can be accessed safely in a manner that is acceptable to the workers[26].

CHAPTER 4: COMMUNITY INFRASTRUCTURE AND OPEN SPACE

General

Adequate provision of open green space for urban residents is a priority for planners and public health policy makers internationally. The positive effects of green space on the mental and physical health of those who interact with it is well documented. The World Health Organization (WHO) states that "availability, accessibility, quality and security of public green spaces" is an important factor for an individual's access to healthy environments[19]. The Environmental Protection Agency (EPA) in Ireland has made a similar statement, recognising

[14] Eurostat. Glossary:Overcrowding rate - Statistics Explained. Eurostat; 2022. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary%3AOvercrowding_rate. (Accessed 16 Dec 2022)

[15] Singh A, Daniel L, Baker E, Bentley R. Housing Disadvantage and Poor Mental Health: A Systematic Review. American Journal of Preventive Medicine. 2019;57(2):262-272. doi: 10.1016/j.amepre.2019.03.018.

[16] Hayward SE, Deal A, Cheng C, Crawshaw A, Orcutt M, Vandrevala TF, Norredam M, et al. Clinical outcomes and risk factors for COVID-19 among migrant populations in high-income countries: A systematic review. Journal of migration and health 2021;3:100041.

[17] Colosia AD, Masaquel A, Hall CB, Barrett AM, Mahadevia PJ, Yogev R. Residential crowding and severe respiratory syncytial virus disease among infants and young children: A systematic literature review. BMC Infectious Diseases. 2012;12(1).

[18] Quandt SA, Brooke C, Fagan K, Howe A, Thornburg TK, McCurdy SA. Farmworker housing in the United States and its impact on health. NEW SOLUTIONS: A Journal of Environmental and Occupational Health Policy. 2015;25(3):263–86.

[19] WHO. WHO. Health Indicators of Sustainable Cities in the Context of the Rio+20 UN Conference on Sustainable Development. 2012

that "people gain physical, mental, cognitive, physiological, emotional, tangible and aesthetic benefits from nature and green spaces"[20].

PA CH 4.1: Update all references to open space in the Draft Plan

The way in which open green space is measured is varied and can be objective or subjective. In addition, perceived green space is an unreliable measure if the quality of the space in terms of safety and cleanliness is poor. A recent Irish study from the Economic and Social Research Institute (ESRI) concluded that while availability of green space is important, it is also essential that these spaces should be of high quality[21]. Planners should take these other characteristics of open space into account, particularly in cases where the lower limit of 12% open space applies.

PA CH 4.2: Section 4.5.1.5 Higher and Further Education, page 159

"Healthy Ireland" is a national framework (2013-2025) for action set out by the Department of Health to improve the health and wellbeing of the people of Ireland. The vision is one where everyone can enjoy physical and mental health and wellbeing to their full potential, where wellbeing is supported at every level of society and is everyone's responsibility. Part of the Healthy Ireland vision is to work in partnership with Higher Education Institutes in developing a Health Promoting campus model of health promotion.

HSE Public Health, Area A supports the development and implementation of measures to encourage uptake of active and public transport options to higher and further education institutions, and discourages the use of private motorised vehicles.

PA CH 4.3: Section 4.5.1.1 Community Centres, page 155

PA CH 4.4: Section 4.5.1.1 Community Centres, page 155

We suggest that a reference / link is made here to an appendix with details of minimum standards for new community centre developments.

PA CH 4.5: Section 4.5.2.3 Quantity, page 168

As per suggestions above in PA CH 4.1, the same applies here: The way in which open green space is measured is varied and can be objective or subjective. In addition, perceived green space is an unreliable measure if the quality of the space in terms of safety and cleanliness is poor. A recent Irish study from the ESRI concluded that while availability of green space is important, it is also essential that these spaces should be of high quality[21]. Planners should take these other characteristics of open space into account, particularly in cases where the lower limit of 12% open space applies.

PA CH 4.6: Section 4.5.2.9 Allotments, Community Gardens and Community Initiatives, page 172

There is much literature confirming the public health benefits of allotments and community gardens, especially in terms of healthy and active lifestyles, in particular for older people[22].

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[20] Carlin C, Cormican M, Gormally M. Health Benefits from Biodiversity and Green Infrastructure. Environmental Protection Agency, Johnstown Castle, Ireland. 2016

[21] Barlow P, Lyons S, Nolan A. How Perceived Adequacy of Open Public Space Is Related to Objective Green Space and Individuals' Opinions of Area-Level Quality. Sustainability. 2021; 13(15):8516

[22] van den Berg AE, van Winsum-Westra M, de Vries S, van Dillen SME. Allotment gardening and health: a comparative survey among allotment gardeners and their neighbors without an allotment. Environmental Health. 2010;9(1):74.

Furthermore, Allotments have the additional benefit of being an example of sustainable land use[23].

HSE Public Health, Area A supports the development and implementation of measures to increase the number of allotment spaces throughout the county.

CHAPTER 5: CLIMATE ACTION

General, rather than specific, comments apply to content of chapter 5: Climate Action.

The built environment in which we live has a direct influence on our health. It can influence physical activity, active travel and the occurrence of non-communicable diseases. According to figures from the WHO, approximately one quarter of annual deaths worldwide can be attributed to the environment[24]. In recent years, there has been an unprecedented rise in the health impacts of climate change. Countries around the globe have been slow and inconsistent in their response, and the health consequences of this provide a clear imperative for coordinated action that places the health of people and planet foremost. Rates of heat-related deaths are increasing worldwide, reaching a record high of approximately 345,000 in 2019, in people over 65 years of age[25]. Air pollution alone causes seven million preventable deaths every year[24]. Access to green and blue spaces provide opportunities for activity, recreation and social engagement, and can improve both physical and mental health.

HSE Public Health, Area A supports the development and implementation of measures to adhere to CAP21 and deliver on climate targets in Fingal.

CHAPTER 6: CONNECTIVITY AND MOVEMENT

General, rather than specific, comments apply to content of chapter 6: Connectivity and Movement.

HSE Public Health, Area A supports the development and implementation of measures to encourage uptake of active and public transport options in Fingal, and discourages the use of private motorised vehicles.

To enable safe and equitable participation in active transport, the following measures are recommended, as outlined by the World Health Organisation (WHO) Global Action Plan on Physical Activity 2018-2020[26]:

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[23] Irvine S, Johnson L, Peters K. Community gardens and sustainable land use planning: A case-study of the Alex Wilson community garden. Local Environment. 1999;4(1):33-46.

[24] WHO global strategy on health, environment and climate change: the transformation needed to improve lives and wellbeing sustainably through healthy environments. 2020.

[25] Romanello M, McGushin A, Di Napoli C, Drummond P, Hughes N, Jamart L, et al. The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future. The Lancet. 2021;398(10311):1619-62

[26] World Health Organisation (WHO). Global action plan on physical activity 2018–2030: more active people for a healthier world. World Health Organisation. 2018. Available at: https://www.who.int/publications/i/item/9789241514187 (Accessed 16 Dec 2022)

- Develop a safe, high quality network for walking, cycling and other forms of mobility on wheels (including wheelchairs), incorporating the principles of universal and equitable access for people of all ages and abilities.
- Increase the connectedness of walking and cycling networks to promote safe access to services including educational facilities, sports and leisure facilities, green areas, local shops and public transport hubs.
- Prioritise actions that reduce risk for the most vulnerable road users, such as the development of pedestrian and cycle infrastructure, which is segregated from motor vehicle and appropriate speed restrictions (i.e. 30km/hr in residential areas) and traffic calming interventions. There should be a particular focus on zones close to schools and other educational facilities.
- Where possible, future development within Fingal should aim to locate educational settings, workplaces and other services together, to enable efficient access by walking and cycling.
- Uptake of active transport should be promoted through social marketing campaigns and the implementation of policies and programmes, which encourage walking and cycling, such as travel to school or work initiatives, or the implementation of cycle hire schemes.

Similarly, HSE Public Health, Area A recognises the existing and planned public transport corridor provision considered in this strategy. Public transport is associated with increased physical activity[27], with improved access to public transport suggested as a means to reduce healthcare costs[28]. To encourage the use of public transport, the following measures are advised as proposed by the WHO[26]:

- Provide public transport that is accessible to all and integrated with facilities for pedestrians and cyclists in urban, peri-urban and rural communities.
- Public transport should be as cost-effective, efficient and accessible as private motor vehicles. Services should have sufficient capacity, coverage and frequency to support this, and should be accessible to people of all ages and abilities.

CHAPTER 8: DUBLIN AIRPORT

PA CH 8.1: Section 8.5.7 Ensuring Environmental Protection and Sustainability, page 309
PA CH 8.2: Section 8.5.7 Ensuring Environmental Protection and Sustainability, page 311
PA CH 8.3: Section 8.5.7 Ensuring Environmental Protection and Sustainability, page 311

International evidence is in abundance demonstrating that increased exposure to aircraft noise is associated with an increase in diagnoses of cardiovascular disease, substance misuse/mental health emergencies and insomnia among local residents[29].

[27] Patterson R, Webb E, Millett C, Laverty A A Physical activity accrued as part of public transport use in England. Journal of Public Health. 2019; 1;41(2):222-230. doi: 10.1093/pubmed/fdy099.
[28] Brown V, Barr A, Scheurer J, Magnus A, Zapata-Diomedi B, Bentley R. Better transport accessibility, better health: a health economic impact assessment study for Melbourne, Australia. The International Journal of Behavioral Nutrition and Physical Activity. 2019; 16(1):89. doi: 10.1186/s12966-019-0853-y.
[29] Wang SS, Glied S, Williams S, *et al* Impact of aeroplane noise on mental and physical health: a quasi-experimental analysis *BMJ Open* 2022;**12**:e057209. doi: 10.1136/bmjopen-2021-057209

There has been considerable research into the effect of aircraft noise on cognitive performance in schoolchildren, due to the interruptive nature of high levels of aircraft noise. Research has suggested effects on reading comprehension and memory. Cognitive performance affects attention, perception, mood, learning and memory. There is evidence to suggest that long-term aircraft noise has a harmful effect on memory, sustained attention, reading comprehension and reading ability. Early studies highlighted that aircraft noise was also implicated in children from noisy areas having a higher degree of helplessness i.e. were more likely to give up on difficult tasks than those children in quieter areas. Reports often indicated that children exposed to long-term aircraft noise showed a higher degree of annoyance than those children from quieter areas. Evidence has been presented to suggest that children do not habituate to aircraft noise over time, and that an increase in noise can be correlated with a delay in reading comprehension compared to those children not exposed to high levels of aircraft noise[30].

A 2021 study was the first to investigate the role of annoyance due to aircraft noise and of sensitivity to noise in the association between aircraft noise exposure and medication use, with a large European study population. The results showed significant associations between aircraft noise annoyance and the use of antihypertensive, anxiolytic-hypnotic-sedative, and anti-asthmatic medications, as well as between aircraft noise exposure and antihypertensive medication use[31].

HSE Public Health, Area A strongly supports the development and implementation of measures to mitigate against excess aircraft noise, and advocates that such measures are expedited insofar as possible.

HSE Public Health, Area A appreciates the opportunity to make this submission. Please do not hesitate to contact us should you need additional information or have any queries in relation to this submission.

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[30] ERCD Report 0908: Aircraft Noise and Children's Learning https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=3925

[31] Baudin, C., Lefèvre, M., Babisch, W. *et al.* The role of aircraft noise annoyance and noise sensitivity in the association between aircraft noise levels and medication use: results of a pooled-analysis from seven European countries. *BMC Public Health* **21**, 300 (2021). https://doi.org/10.1186/s12889-021-10280-3

APPENDIX A

Context: Ireland faces a number of public health challenges through changing demographics, increasing incidence of lifestyle-related health conditions such as obesity and type 2 diabetes, infrastructure requirements, the balancing of transport needs, and the reconciliation of urban design and urban intensification issues.

HSE Public Health, Area A has a statutory obligation to improve, promote and protect the health of people and communities in the East and North-East region of Ireland. Consultants and Specialists in Public Health Medicine (CPHMs and SPHMs) are all designated as Medical Officers of Health (MOH). They are appointed in the HSE Public Health, Area A to provide public health services for Cavan, Louth, Meath, Monaghan, and North Dublin.

The current mandate and statutory responsibility for comprehensive health protection related to the environment comes through MOH legislation. The Health (Duties of Officers) Order, 1949 (S.I. No. 128 of 1949)[32] states that Medical Officer of Health (MOH) ***shall*** carry out the following roles:

Section (1): *Advise the county council – generally in relation to the health of the people and the provision of health services, sanitary services and housing accommodation, on any questions relating to health matters or sanitary matters in the making and subsequent operation of such bye-laws.*

Section 1 is the advisory mandate. While the law expects the MOH to advise the county council (as would have been appropriate at the time of enactment) in practice, because of the changes in operational responsibilities, CPHMs and SPHMs advise the relevant authorities, including the county council.

Section (2): *Inform himself as respects all influences affecting or threatening to affect injuriously the public health in the county and as respects the causes, origin and distribution of diseases in the county.*

Section 2 provides a mandate for public health investigations and risk assessment and for descriptive and analytical epidemiology of the effect of the environment on health, including for climate change influences on health.

In addition, where there is an environmental source of an infectious disease, Infectious Diseases Regulations, 1981 (S.I. No. 390 of 1981) also applies[33]. This mandates the MOH to investigate and take all necessary steps to prevent the spread of infection. The most common area where the MOH investigates and takes control measures is for drinking water contamination, but other areas include contamination of bathing water, air quality incidents, chemical contamination incidents, and the MOH also has an important emergency planning, preparedness and response role.

HSE Public Health, Area A's primary role is to improve population health. It therefore actively seeks to influence any initiatives or proposals that may affect population health in the East and North-East regions of Ireland to maximise their positive impact and minimise possible negative effects.

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[32] Health (Duties of Officers) Order, 1949 Available URL: http://www.irishstatutebook.ie/eli/1949/si/128/made/en/print (Date accessed 19th December 2022).

[33] Infectious Diseases Regulations 1981 Available URL: https://www.irishstatutebook.ie/eli/1981/si/390/# (Date accessed 19th December 2022).

APPENDIX G: **20230508 AirNav Ireland response to Department of Transport.pdf**

8th May 2023

Introduction

AirNav Ireland received the below queries from the Department of Transport on 5th May 2023. This document contains a response. For completeness, the appendix contains a response to a related query provided

Minister Ryan agreed to meet recently with some parliamentary colleagues in relation to concerns expressed by some of the communities around Dublin airport in relation to the operation of the new flight paths off the North Runway introduced in February this year.

A number of technical questions have been posed to the Minister and he has asked that the Department seek a response from AirNav Ireland on these. I would be grateful if you would consider and revert as soon as possible on the following questions:

The final regulatory safety reviews before the North Runway became operational stipulated a minimum divergence of 30 degrees off the North Runway in westerly departures:

1. *Can you give a full, detailed, and technical explanation for this decision?*
2. *Can you explain why the flight track of the missed approach on the South Runway was not adjusted?*
3. *Is it possible for the flight track of the missed approach to be adjusted to allow flights from the North Runway to follow a no divergence track in westerly departures?*
4. *Is it possible for the flight track of the missed approach to be adjusted to allow flights from the North Runway to follow a 15 degree divergence track in westerly departures?*
5. *The decision shows a 30 degree divergence for westerly departures off the north runway but just a 15 degree divergence for easterly departures. Why is there a difference?*
6. *It's clear from current flight paths that the divergence is happening closer than was anticipated in the modelling. Why is that the case?*

Response to 1

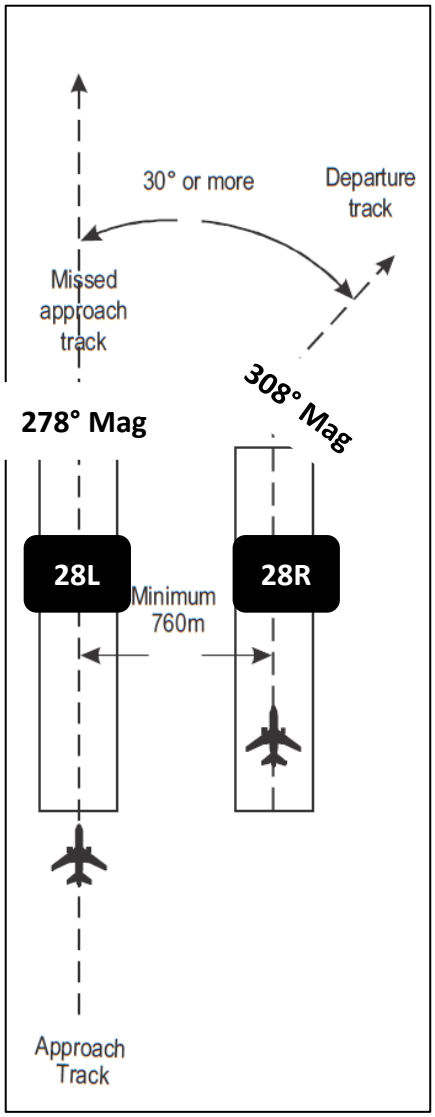
Diagram 1 below shows the ICAO requirement for where aircraft departing on one runway (RWY28R for Dublin) and an aircraft on final approach to another parallel runway (RWY28L) may be authorised **if the departure course diverges immediately after take-off by at least 30 degrees from the missed approach track of the adjacent approach**.

The magnetic bearing of the two runways is 278 degrees. Therefore, the RWY28R departure track was designed to comply with the 30 degrees minimum divergence requirement.

The relevant reference is ICAO Doc 9643 – Manual on Simultaneous Operations on Parallel or Near-Parallel Instrument Runways (SOIR), Second Edition, 2020.

Note: Dublin Airport Parallel Runways are 1,701m apart.

Diagram 1 – AirNav Ireland illustration of ICAO Requirements as set out in ICAO Doc 9643



Response to 2

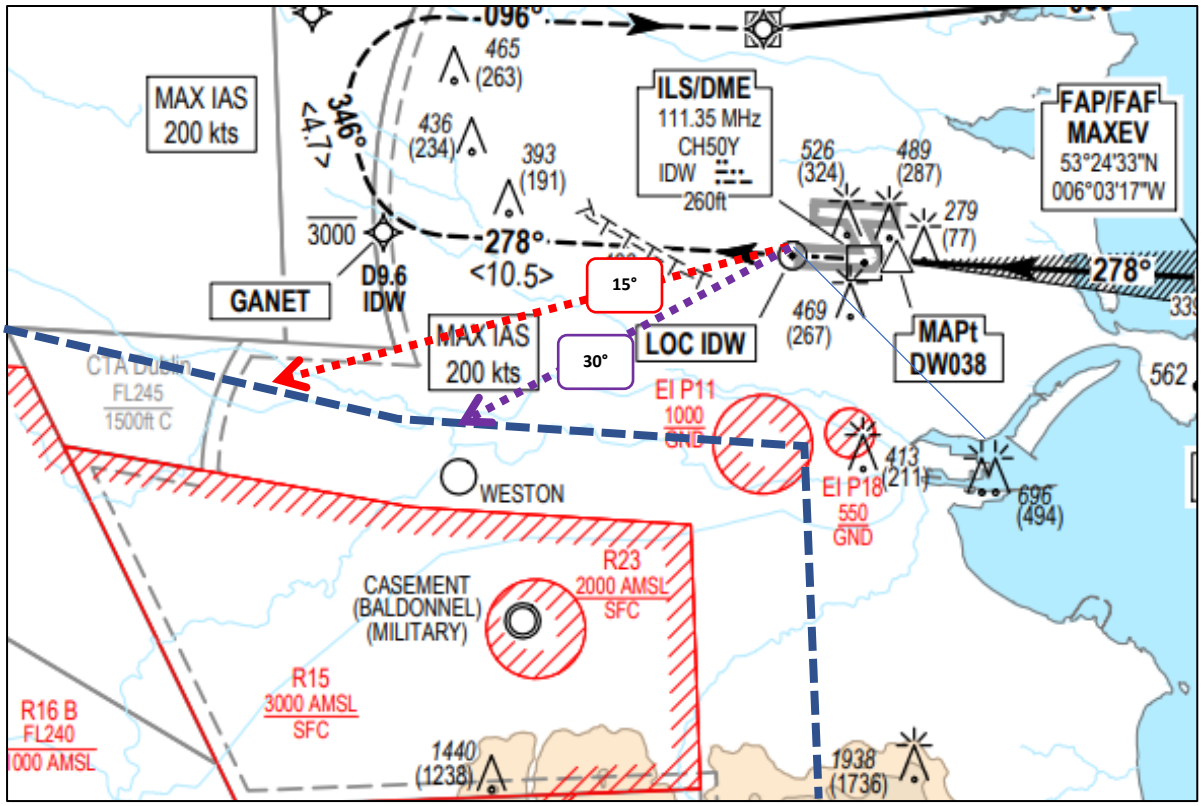
During development of procedures the possibility of a left turn missed approach was considered by IAA ANSP but the overriding ICAO Doc.9426 requirement for a safety-driven divergence *(see 1. above)* of the flight paths of 30 degrees meant that such a change was not deemed as feasible from an airspace, for the following reasons:

a. The airspace to the south-west of the airport is controlled by military ATC and commercial traffic does not automatically have access to it. Indeed, the agreement is that traffic controlled by Dublin must remain clear of the area shown by the blue dotted line. This significantly reduces the area for missed approach procedures.

b. A change to the long-standing missed approach from Runway 28L would have an impact on other Civil and Military flight operations including Gardai Air Support Unit (GASU) and Weston airport.

c. In addition, a missed approach is designed to cater for an engine-out go-around. Climbing above the R15 3000ft top altitude may also not be achieved in the available distance.

Diagram 2 – AirNav Ireland illustration of Airspace Restrictions around current military activity and how these impact the ability for an alternative missed approach



Any decision on amended missed approach procedures from Runway 28L would require multi-stakeholder discussion and agreement (daa, IA, ANCA, Irish Air Corps, Weston, GASU etc).
Additionally, changes to the missed approach procedures would lead to aircraft conducting missed approaches flying over high density residential areas.

Response to 3

In line with the answer to Question 2, to achieve a no divergence track, the Missed Approach for RWY28L would have to diverge 30 degrees left onto track of 248 degrees *(shown on Diagram 2 as magenta dotted line)*.

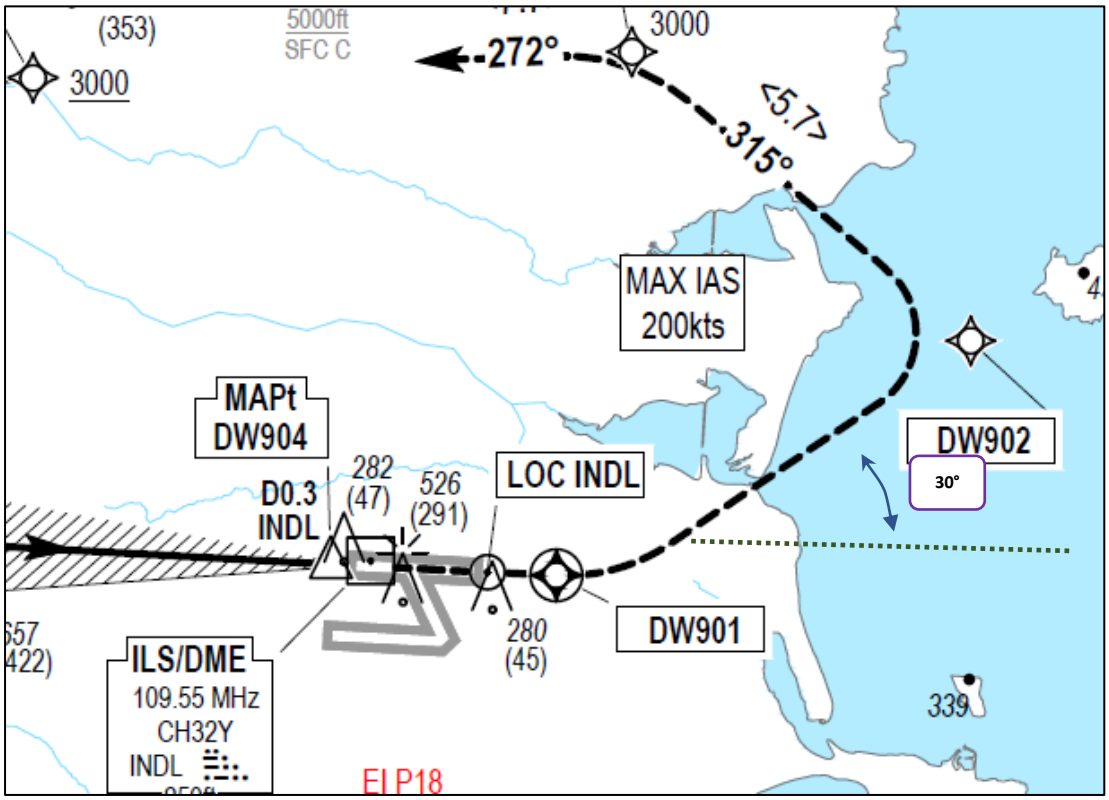
Response to 4

In line with the answer to Questions 2 and 3, to achieve a 15-degree divergence track, the Missed Approach for RWY28L would have to diverge 15 degrees left onto track of 263 degrees *(shown on Diagram 2 as red dotted line)*.

Response to 5

The missed approach from RWY10L **does** have a 30-degree divergence to protect RWY10R Departures (see Diagram 3 – from AIP Ireland)

Diagram 3 Extract from Aeronautical Information Publication



Note that the requirements for the Departure from RWY10L are different to those for RWY28R because it is not planned to use RWY10R for arrivals when RWY10L is being used for departures. Therefore, there is no need to consider Missed Approaches from RWY10R.

Response to 6

Modelling of flight paths, from a noise perspective, is the responsibility of the daa. It is important to differentiate between noise modelling and the considerations from AirNav Ireland as set out in this paper.

As far as Air Traffic Management (ATM) operations are concerned, monitoring of flight tracks is continuously applied to show that these are safe and fully consistent with the State approved Instrument Flight Procedures, rather than an assessment of the effect on residential communities, which is a matter for the daa.

Summary

Alternative missed approaches for Runway 28L were briefly examined by IAA ANSP at the beginning of the parallel runway project but alternative options were dismissed by IAA ANSP due to the airspace restrictions, as described above. The aerodrome operator, daa, was advised accordingly. To be clear, this examination process ruled out an alternative missed approach on 28L due to airspace restriction described in Diagram 2, which continues to be in place today.

AirNav Ireland can assist the Aerodrome Operator in revisiting the process for amending flight paths / Missed approaches, if initiated by the aerodrome operator as per the regulatory requirement, but any change would need to be accepted by other stakeholders, including the military, and adhere to the applicable regulatory standards.

In summary, any amendments to the current flight paths or missed approaches will have consequential knock-on effects around noise that would need to be fully considered[1] and as set out above it would impact military operations and other aviation stakeholders.

[1] It is very likely that any alternative missed approach would impact residential areas not previously or currently impacted by flights, albeit on several occasions per day i.e., when the missed approach occurs (an estimated average is 2-3 flights per day). The overall consequences of this in terms of noise would be a responsibility for the aerodrome operator, daa, to assess.

Appendix – Response provided to the Department of Transport on 3 April in relation to a separate query

Question received on 31 March

Is it possible for the airport to meet its planning permission through the design of a new Missed Approach Procedure for 28L (South Runway) with the current airspace?

Response provided on 3 April

Of course, we are more than happy to assist with your request, but it is important to be clear upfront that the planning permission requirement is a matter for daa. It is not appropriate for the IAA ANSP to advise on what conditions daa might be in a position to comply with its planning permission.

The IAA ANSP can, however, provide a number of observations in relation to an alternative missed approach procedure for the original runway 28L. The paper we received focuses predominantly on parallel runway operations in segregated mode, but it is important to be clear that any alternative missed approach procedure for 28L that is less than a 30-degree angle from the take-off track from Runway 28R would impact capacity at Dublin Airport insofar as it would prohibit independent runway operations.

We have briefed key stakeholders on this matter noting that the existing and long standing 28L missed approach procedure is straight ahead to (i) avoid activity at Baldonnel and Weston Aerodromes, (ii) avoid high terrain (Dublin mountains) and high-density residential areas (including city centre) and (iii) minimise the complexity of air traffic control go around procedures. The IAA ANSP has previously explored alternative solutions with daa, but the IAA ANSP has been cognisant of the consequences of an alternative missed approach procedure compared to the tried and tested procedure in use for decades. A primary factor that influenced our assessment of the matter is that an alternative missed approach would not be possible on the basis of a letter of agreement in place with the military.

If a process was initiated by the aerodrome operator daa in order to explore the suitability of an alternative missed approach procedure on 28L and if an option was possible in terms of military acceptance and regulatory approval from a safety perspective, then the alternative missed approach procedure would affect the long-established noise corridors off 28L. This would result in a large number of residents being affected for the first time by flights conducting missed approaches from Runway 28L – in the event that such an alternative approach was progressed, the exact details in relation to the residential areas affected would likely be informed by an assessment undertaken by daa.

APPENDIX H: **Pre-planning_25-02-2020.pdf**

Comhairle Contae Fhine Gall
Fingal County Council

An Roinn um Pleanáil agus Infrastruchtúr Straitéiseach
Planning and Strategic Infrastructure Department

Record of Pre Planning Consultation	**Reference Number:** PPC 106276 & PPC 106336 **Date of Consultation:** Tuesday 25th February 2020
Address of Site: North Runway & Terminal buildings, Dublin Airport	
Proposed Development: Amend operating restrictions & increase in passenger capacity at Dublin Airport	
Applicant: daa (Dublin Airport Authority) (see copy of full attendance sheet)	
Planning & Strategic Infrastructure Department: Phillippa Joyce	
Aircraft Noise Competent Authority: (see copy of full attendance sheet)	
File Note: At the pre planning consultation on 5th February 2020, there was agreement for a noise modelling workshop to be undertaken. ANCA noise consultants gave a presentation (see copy of the presentation, to be read as part of this record). ANCA recording pre planning consultations of matters under its remit (see copy of ANCA record – to be read as part of this record).	

This S247 pre planning consultation comprises an aircraft noise modelling workshop, led by the ANCA to discuss and advise the applicant accordingly.

The P&SI Dept has no key comments on the content of and discussion at the noise modelling workshop.

P&SI Dept key comments:

- Part of the S247 pre planning consultation includes discussion about the applicant's proposed developments at the airport in relation to an increase in passenger numbers, the nature of these developments (a possible 35mppa, and proposed 40mppa), and the method by which the applicant may apply for permission for these applications.

- Discussion continues from previous S247 pre planning consultations on these matters, dated 5th February and 14th February 2020.
    - Including a reassertion by the P&SI Dept that the applicant should give consideration to an application for an increase in passenger numbers that would be within the

applicant's control and may involve maximising capacity within its existing infrastructure.

- Discussion on the interpretation of the 32mppa passenger capacity cap with regard to types of passengers, in particular the transfer/ transit passengers.

- The P&SI Dept advises the applicant that, with reference to ABP decisions and known international, European and national methods of counting passengers at airports, the 32mppa passenger cap included in Condition 3 of F06A/1248 (PL 06F 220670) and Condition 2 of F06A/1843 (PL 06F 223469) is considered to be a cumulative, annual figure comprising all passengers using (traveling to, through and from) Dublin Airport.

- The P&SI Dept advises the applicant that as the 32mppa cap is considered to be all inclusive figure, it is not considered possible/ practical for planning assessment and subsequent enforcement purposes, to make any differentiation between different types of passengers.

End

Phillippa Joyce

3/3/2020

APPENDIX I: **Pre-planning_02-10-20219.pdf**

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

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An tÚdarás Inniúil um Thorann Aerárthaí
Aircraft Noise Competent Authority

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

Ref. No.: **PPC 106276 (CA 19.01)** Date: 02nd October 2019

Applicant: **DAA**
Development Description: Detailed Development Description not given – see explanation below.
North Runway – Change to Permitted Runway Operations (CTPRO) *(CA Description Relevant Action)*

Interim comments of the Competent Authority on the documents received subsequent to the Pre-Application Consultation under Section 247 of the Planning & Development Act 2000 (as amended) of 12th September 2019 (listed below 01-07). It would not be appropriate to address some issues included in the submitted documents in the absence of robust exploration of candidate scenarios in the first instance.

Document Submitted	Description	Version
01	Cover Letter – Martin Doherty	18th Sept 19
02	Draft EIA Scoping Report	Revision 2 16/9/19
03	Powerpoint slides from S247 meeting 12/9/19.	12/9/19.
04	Intervistas report - Dublin Airport Economic Impact of Operating Restrictions	8th July 2019
05	*Mott MacDonald report* - Dublin Airport Fleet Modernisation Analysis	April 2019
06	*Mott MacDonald report* - Dublin Airport Operating Restrictions. Quantification of Impacts on Future Growth.	Revision 3. 2nd August 2019
07	Bickerdike Allen Partners report - DRAFT Regulation 598 Noise Assessment – Initial Results	18 September 2019

Document 01 - Cover Letter Martin Doherty

1. The correct terminology should be used throughout, in accordance with the 2019 Act the application is for a *Relevant Action* to be taken, rather than (CTPRO) Change to Permitted Runway Operations.

Document 02 - Draft EIA Scoping Report

1. The correct terminology should be used throughout, in accordance with the 2019 Act the application is for a *Relevant Action* to be taken, rather than (CTPRO) Change to Permitted Runway Operations.
2. Section 1.3 EIA Scoping should be requested from the Planning Authority rather than the Competent Authority.
3. The interim comments from the Competent Authority will deal with the Noise section only, subject to further legal advice.
4. The term *"Baseline"* should be used in reference to the EIA process and not the EU Regulation 598/2014 process. The 598 process shall use "situation scenarios"
5. It should be clarified in Section 6.6 exactly which sources of aircraft ground operations noise and vibration related to any other aircraft ground operations away from the are to be included.
6. The EIA needs to consider who is impacted and not just the net result. Different options will have different significant impacts on different people.

7. EIA and Balanced Approach Assessment

   - A key observation of the aircraft noise assessment within the scoping report is that little is mentioned as to exactly how EIA significance under the EIAR will be considered alongside the requirement to develop and assess the proposals under the Act. Instead the scoping report states that this will be developed to take into account absolute levels of noise exposure and change.
   - At this point it is helpful to reflect on the respective requirements of the two legislations. The Act requires airport noise-related restrictions to follow the ICAO balanced approach and to consider their cost-effectiveness, whilst the other requires the significance of the proposals on sensitive receptors with respect to the environment to be identified.

   The setting of the NAO will most likely address the impacts of the proposals at a 'project level' i.e. it will consider the impact across the whole population.
   • The assessment under EIAR will need to have regard for the significance of the proposals, not just at a project level, but on a community basis.
   • The articulation of the effects of the proposals may need to be more detailed through the EIA rather than through the ICAO balanced approach. This does not necessarily have to be the case, however it would be arguably unreasonable for daa to have to undertake a full EIA of all of its proposals. However, there is a requirement under the EIAR to ensure that alternatives are considered. This may constitute a short-listed number of candidate scenarios.

   Metrics for Assessment

   - The metrics for assessment as proposed by the EIA scoping report appear sensible. The main metrics required for such assessments are documented, however nothing is volunteered with regards to the thresholds of noise exposure, values or consequential effects that will be reported. The EIAR will require noise to be considered alongside health, therefore it is vital that noise

exposure metrics are considered alongside dose-response relationships to present potential effects.
- It is recommended that this aspect of EIA scoping takes it lead from the work necessary in determining the NAO. The competent authority is available to work with daa to identify to understand how various metrics and dose-response relationships perform with respect to daa's proposals. This should drive the selection of the dose-response relationships for assessment at EIA.

It is noted that the metrics relied on in the scoping report identify with UK aviation noise policy. The use of the Nx metrics should be welcomed as these may provide assistance in describing potential effects and how aircraft noise may be experienced by communities.
- It is however important to note that once an NAO has been set for Dublin Airport, this will effectively become the noise policy requirement for the airport. This will take precedence over other policy from elsewhere and must be shown to be met through the EIA. In this sense, other policies associated with the Airport such as those attached to the forthcoming Local Area Plan will need to be taken into consideration

Approach to Significance

- The scoping report states that the significance of the proposals will be taken in line with Regulation 598/2014. As discussed above, it is debatable whether this is appropriate, as such an approach under the Act only addresses the overall impact of the Airport.
- For both air and ground noise, the scoping report does not offer any significance criteria. These will need to be established so that the significance of the proposals can be quantified. It is recommended that first principles such as the metric, threshold values and the use and selection of dose-response relationships are agreed first with the Competent Authority.

Modelling Methodologies

- For both the air and ground noise topics, a comprehensive modelling methodology will be required. In the case of the air noise topic, this must be the same as that employed for assessment work under the Act. For ground noise, where there is currently little in the way of best practice, a complete methodology will be required detailing the method for simulating ground movements, and aircraft ground noise emissions. This methodology will also need to address the 3D noise model development and any associated assumptions.

Baseline Measurements

- The scoping report states that baseline noise measurements will be undertaken and that the airport's noise monitoring terminals will be used to help describe the current baseline. This should be welcomed, however the scope and detail that can be described from this exercise should be agreed. It is recommended that where the aircraft noise monitoring terminals are used, measurements

should be interpreted to describe aircraft event levels, the time and frequency of overflights, along with daily variations in noise exposure levels.

Document 03 - Powerpoint slides from S247 meeting 12/9/19.

Superseded by information submitted post-meeting.

Document 04 - Intervistas report - Dublin Airport Economic Impact of Operating Restrictions

Noted. Not entirely relevant under the scope and remit of the Competent Authority. This document focuses on the economic implications of the restrictions rather than the cost-effectiveness of the restrictions in relation to a noise abatement objective. It may be of interest to the Planning Department.

Document 05 - Mott MacDonald report - Dublin Airport Fleet Modernisation Analysis

1. The terminology used to classify aircraft types should include ICAO Chapter classifications.
2. It is noted that the study appears to review and consider the natural evolution of the fleet at Dublin Airport rather than the potential effects of any incentives that may be offered by daa to advance the modernisation of the fleet and/or encourage airlines to use quieter aircraft.
3. Clarify how this study has featured in the Initial Study work carried out by Bickerdike Allen Partners and whether this study has influenced the schedules being used by BAP within their modelling.

Document 06 - Mott MacDonald report - Dublin Airport Operating Restrictions. Quantification of Impacts on Future Growth.

1. Slide 3

"Therefore, it is unclear how the proposed DUB operating restrictions could be implemented in a way that is compatible with the EU Slot Regulation and that would be robust against potential legal challenge."
Can this statement be clarified?

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.

Document 07 - Bickerdike Allen Partners report. DRAFT Regulation 598 Noise Assessment. Initial Results

The scenarios considered within the initial study relate mainly to runway operations which have a consequential effect on the communities that would be overflown at night. It would be essential that each of the runway operations described are contextualised against:

1. The communities (east / west) that would become overflown at night for the first time;

2. Whether the form of operation would mean that certain communities would be overflown at night as well as during the day;

3. Whether the form of operation would mean that certain communities would be overflown at night but not during the day.

It would also be relevant to consider how the various runway operations being considered align with potential noise mitigation strategies such as:
1. Sharing night-time noise between communities; and
2. Minimising the total number of people affected by night-time noise.

Assessment Years and Scenarios

Assessment of additional scenarios would help identify the evolution of the noise situation at Dublin Airport should there be no change in Conditions 3(d) and 5. Relevant scenarios for modeling would include:

Situation	Description	Rationale
Consented Situation	A scenario which describes the impact which was consented at the Oral Hearing taking into account the restrictions of the North Runway consent. This	To identify the impact that was consented following the North Runway Oral Hearing.

	would mean modelling the forecasts and scenarios used at the Oral Hearing	
Current Situation	The situation in 2018/19	To understand the noise impact of the Airport at this point in time.
Pre-North Runway Operation	The situation in 2021/2 immediately before the opening and operation of the North Runway	To understand how the noise impact of the Airport will change from now and to before the North Runway comes into operation. This situation will allow for a direct comparison of the noise benefit or otherwise brought about from the existing restrictions set out in Conditions 3(d) and 5 of the North Runway Consent.
Current Consented North Runway Operation upon Opening	The situation immediately after the opening and operation and the North Runway	To understand what would happen in the year following the opening of the North Runway with Conditions 3(d) and 5 in place.
Future Forecast North Runway Operation upon Opening.	A situation in the future following the growth of airport operations as forecast by the Airport's masterplan.	To provide an understanding of the noise impact associated with a mature operation with the existing conditions in place.

For each of the situations, noise exposure contours and associated exposure statistics including those relating to health will be required. As a minimum, and as required by Reg598, the Lden and Lnight metrics should be prepared. However, this does not mean that other metrics cannot be used. All associated noise exposure information should be prepared using the latest calculation methodologies i.e. ECAC Doc 29 4th Edition 2016, as implemented in the Aviation Environmental Design Tool (AEDT) version 2.0 onwards. To this end, candidate scenarios should have regard to:

1. The minimum END requirements, which include:
    a. Lden and Lnight;
    b. area, dwellings and people exposed to noise;
    c. schools and hospitals exposed to noise;
    d. noise maps of existing and future situations; and
    e. difference maps for future situations.
2. Quantifiable metrics for the NAO should include what is likely to be forthcoming from the revised END Annex III (which is expected to have a transposition deadline of 21 December 2021) and include as a minimum:
    a. Lden and Lnight;
    b. % Highly Annoyed (%HA) (per building or noise level band) and total number HA; and

c. % Highly Sleep Disturbed (%HSD) (per building or noise level band) and total number HSD

d. The number of day & night aircraft movements by hour in each of the scenarios being considered;

e. A scoring of the number of movements at night by hour for each of the scenarios taking into account aircraft noise characteristics by Quota Count points and aircraft chaptering; and

f. LAeq, 16hr (daytime) to track how potential changes at night have a consequential impact on daytime noise exposure. This should be presented in 1 dB bands from 50 dB LAeq, 16hr.

3. Other noise metrics may be appropriate and may help articulate the effects. These, for example, may include but are not limited to:
    a. Additional Awakenings (due to aircraft noise);
    b. Nx metrics describing the number of night-time maximum noise level events' and/or
    c. Health outcomes.
4. Metrics that relate to noise and airport scheduling such as quota counts5, aircraft movements by noise chapter and by time of day.
5. Changes in night-time operations can affect daytime airport operations and therefore daytime noise exposure, for example by stimulating growth. This may be something to consider alongside the candidate scenarios.

In considering candidate scenarios, all threshold values prescribed by potentially relevant research studies and guidance must be considered. These may include, but not limited to:

1. World Health Organisation Environmental Noise Guidelines for the European Region 20186 – it should be noted that the European Commission recently issued a call for tenders which appears to support the use of the latest WHO noise guidelines as a basis of EU noise policy;
2. UK Civil Aviation Authority (CAA) Study of Noise Attitudes 2014: Aircraft7 – the study which effectively replaces the studies relied on in Ireland for aircraft noise policies around Dublin Airport as part of the North Runway planning consent and lapsed Local Area Plan (LAP);
3. Current EC Position Paper – the current stated basis of EC noise policy as based on research by Miedema and Oudshoorn
4. The WHO Regional Office for Europe publication "Burden of disease from environmental noise - Quantification of healthy life years lost in Europe" – which contains the methodology to use the disability weight (DW) figures in (a).
5. The most recent 'official' EU document (EEA 2011) report on health impact assessment using the Miedema and Oudshoorn dose-response curves;

6. The most recent EC funded publication, RIVM report 2018-0121 'Study on methodology to perform environmental noise and health assessment'.

Assumed Noise Abatement Objective

The competent authority acknowledges the work to date on the development of a Noise Abatement Objective (NAO) based on the modelled scenarios. The competent authority will facilitate a workshop to explore the impacts of all candidate scenarios leading to the determination of a NAO.

The interim comments of the competent authority on the submissions to date are:

1. Reliance on a single value such as the approach adopted in the Initial Study does not have regard for impact across the population affected by aircraft noise.

2. Work should continue on the development of a Noise Abatement Objective and quantifiable metrics for the NAO to be explored and determined.

Modelling Methodology

The Initial Study does not describe in full the approach taken for the modelling and assessment of the various options considered. This will need to be provided in full and tested so conclusions from this and any forthcoming study are robust and can be relied on.

Noise and Flight track monitoring

The applicant shall provide details on existing and proposed noise monitoring terminals that will facilitate validation of predictive noise models.

The applicant shall provide details on the implementation of public accessible web-based noise and flight tracking to promote community information and engagement.

The Competent Authority would like it to be noted that as these consultations are taking place under Section 247 of the Planning & Development Act as amended, the CA considers that its participation shall not prejudice the performance by the Competent Authority of its functions under the Act or Regulations and cannot be relied on in the planning process or in legal proceedings

Signed Aircraft Noise Competent Authority Representative

_____ **Date: _____**

APPENDIX 3

Aviation Noise report by Suono and monitoring reports for the noise measurements taken in our community during the summer of 2023

Note

Title	EIAR 2023 Document Review		
Project	Dublin Airport – North Runway		
Reference	283C.NT.1.1	**Author(s)**	BHo, DB
Date	12 December 2023	**Reviewer**	VC

1.0 Overview

Introduction

1.1 This note sets out Suono's initial review of the noise chapter submitted as part of the revised September 2023 supplement to the Environmental Impact Assessment Report (EIAR) for Dublin Airport's North Runway, together with its appendices and specific documents referenced within.

1.2 Particular attention has been paid to the air noise assessments due to the nature of the application and the likelihood of significant effects arising.

1.3 The note focusses on issues which are fundamental to the noise assessments.

Planning Conditions

Permitted Conditions

1.4 Planning permission for Dublin Airport's new North Runway, which became operational on 22 August 2022, was granted in 2007[1]. This permission contained conditions restricting the night-time use of the runway, which are summarised below:

- **Condition 3(d)** Runway 10L-28R (North) shall not be used for take-off or landing between 2300 hours and 0700 hours;

- **Condition 5** The average number of night-time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period (16 June to 15 September).

Proposed Conditions

1.5 In June 2022, the Airport Noise Competent Authority (ANCA) of Fingal County Council made a Regulatory Decision[2] directing the planning authority to replace the original operating restrictions with the conditions summarised below. Condition 3(d) would be amended and condition 5 would be revoked and replaced with an annual noise quota scheme.

- **Condition a:** The airport shall be subject to a Noise Quota Scheme (NQS) with an annual limit of 16,260 between the night-time hours of 2300 and 0659 (inclusive, local time) with noise-related limits on the aircraft permitted to operate at night. The annual noise scheme shall be applied as detailed in Schedule A.

[1] An Bord Pleanála decision 2007, Reference Number: PL06F.217429
[2] ANCA Regulatory Decision Ref F20A/0668, 22 June 2022

- **Condition b:** Runway 10L-28R (North) shall not be used for take-off or landing between 0000 and 0559 (inclusive, local time) except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports or where Runway 10L-28R length is required for a specific aircraft type.

1.6 Implementation of **Condition b** effectively means that aircraft can use the North Runway during the "shoulder" hours of the night-time (2300-0700) period, these being 2300-0000 and 0600-0700.

1.7 Prior to ANCA's request, an original Environmental Impact Assessment Report (EIAR) was submitted in September 2021 to Fingal County Council. Permission was granted on 8 August 2022 and an appeal lodged on 24 August 2022.

1.8 Following the opening of the North Runway, however, a number of operational changes have occurred that could affect the assessment outcomes reported in the 2021 EIAR. The EIAR Supplement was therefore issued by the Applicant in September 2023 and as stated in 13.1.1, is a replacement noise chapter, rather than an addendum.

Condition Commentary

1.9 The decision to grant planning permission for the northern runway by An Bord Pleanála (ABP), as stated in ABP decision notice D217429, acknowledged that the application contained inconsistencies and deficiencies in information. For noise, these shortcomings are set out in R217429A [Volume 2 – Consultants' Reports], as summarised by Mr Rupert Thornley-Taylor.

1.10 Mr Thornley-Taylor concludes:

> *In the absence of counterbalancing advantages, which are outside the scope of my report, I do not consider that the applicants' mitigation proposals would offset the effects of noise from the development sufficiently to leave no residual significant effects. It follows that on strict grounds of noise alone, the application should in those circumstances be refused.*

1.11 Mitigation proposals are also taken to represent a substantial shortcoming of the current application, and this is discussed in more detail later in this note [*see Section 7: Noise Insulation*]. As a consequence, we would expect for the same recommendation to be made on noise grounds for this application.

1.12 ABP state in D217429 (page 3 of 13):

> *In deciding not to accept the Inspector's recommendation to refuse permission, the Board considered that sufficient information had been submitted in the Environmental Impact Statement, in further information submitted both to the planning authority and the Board and at the oral hearing to enable it to make an assessment of the significant impacts of the proposed development on the environment and its acceptability in terms of proper planning and sustainable development. The Board considered that in overall terms, the inconsistencies or deficiencies in information referred to by the Inspector were not so significant as to warrant a refusal of permission and could be addressed by way of condition. In particular, the Board was satisfied, on the basis of the information submitted and the conditions attached, and, having regard to the fact that there are no planning restrictions on the current operation of the airport runways, that -*
>
> *(1) there would be no significant deterioration in noise conditions at night time in the vicinity of the airport due to the proposed Option 7b operating mode for the runways (non-use of new runway and of cross runway at night) and the restriction on night time aircraft movements by way of condition,*

(2) in relation to day time noise, there would be some improvements relative to current or future noise impacts with the existing runway system to be offset against disimprovements in other areas/respects and the net effects would not be significant in terms of public health and safety such as to warrant a refusal of permission,

(3) in relation to schools affected (including pre-school facilities), the mitigation measures proposed, reinforced by conditions and monitoring would ensure that a suitable noise environment can be maintained within classrooms and school buildings generally.

In coming to the above decision, the Board noted that, in addition to planning controls, Dublin Airport would in the future be subject to the new noise control regime introduced under the EU Environmental Noise Directive 2002/49/EC and the Environmental Noise Regulations, 2006.

1.13 We note that for each of the three points above, given by ABP as reasons to grant permission despite shortcomings, that:

(1) is one of the specific conditions proposed to be changed in this application, moving from the northern runway not being used for any night-time flights to flights in the first and last hours of the night (2300-0000 and 0600-0700).

ANCA's decision would also allow the largest of commercial aircraft to use the northern runway at any time of night, through inclusion of the text, "*or where Runway 10L-28R length is required for a specific aircraft type*", meaning that the period between midnight and 0600 cannot truly be considered respite.

(2) and (3) are both potentially affected by this current application, as no specific daytime assessment has been carried out, despite acknowledged changes in the daytime forecasts [see Section 2.14 onwards, '*Non-residential Receptors*'].

2.0 ANP Requests for Information

Requests

2.1 In a letter dated 27 April 2023, ANP set out several requests for information to assist them in making a decision on the current application. These were:

1 – Impact of Peak LAmax Noise Levels from Air Traffic Movements (ATMs) on sleep;
2 – Sensitivity Testing of the Population Numbers Covered by the Noise Contour Predictions;
3 – Baseline years assumed in the assessment.

2.2 The Developer has sought to answer these RFIs in *Noise Modelling Report ABP RFI 27 APR 2023 – A11267_23_RP060_3.0*, dated 13 September 2023 ('the RFI report'). We have the following comments on this information.

Request 1: L_{Amax} levels on sleep

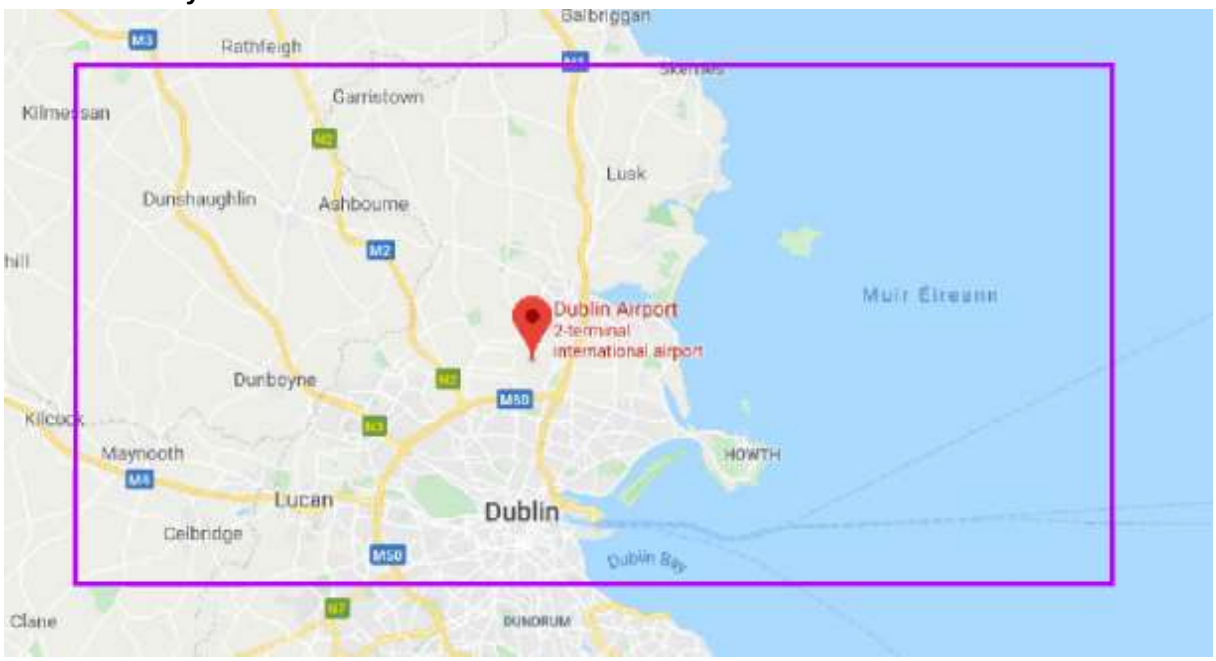
Obfuscation of Results

2.3 The Developer states in the RFI report:

"The probability of additional awakenings has been determined for the population in the same study area as the EIAR Supplement, which contains over 1 million people. The probability of additional awakenings is computed for each person, and expressed as overall totals of the expected number of additional awakenings across the total population."

2.4 Through taking this approach, the % awakening comparison and the overall results are difficult to comprehend. The air noise study area, taken from EIAR Figure 13B-1, can be seen below:

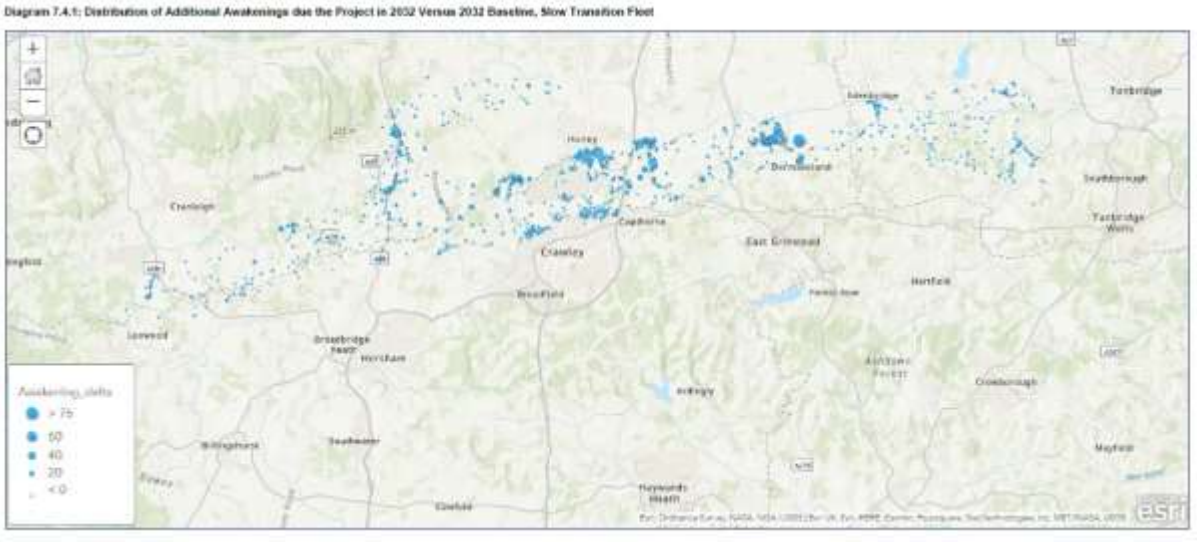
Air noise study area



2.5 Through the inclusion of most of Dublin's population, any results, whether by way of comparison or standalone, do not allow for a detailed inspection of awakening changes arising from changes to the use of the northern runway. We are concerned that this could lead to an underestimation of effects for those living in close proximity to the northern runway.

2.6 Other airport applications have taken an approach that allows for effects at specific locations to be taken into account. For example, the current Gatwick Airport DCO application has provided information, such as that shown in the figure below.

Gatwick Airport DCO awakenings location figure



2.7 The benefit of such an approach is that it can be used to check against noise insulation scheme coverage, provide useful information to local communities and the results compared against local Airport Noise Zones [Noise Zones are discussed in more detail later, see Section *6.11*].

2.8 Given that some communities will be newly exposed to night-time aviation noise, should permission be granted, a location-based approach is key, as opposed to a % change over the extended study area.

Criteria

2.9 The RFI report states, "*While there are no specific criteria by which to judge the significance of the number of additional awakenings, the relative values for the scenarios can be compared.*"

2.10 While we agree that there is no specific guidance from which to derive criteria, the Heathrow Airport Third Runway Preliminary Environmental Impact Report (PEIR) identifies a key assessment standard, namely that an air noise Significant Observed Adverse Effect Level (SOAEL) arises at any location newly experiencing one additional awakening due to aircraft noise as a yearly average.

2.11 The Developer makes no reference to this threshold. Therefore, if this is the Developer's position, justification should be provided as to why it is not relevant to this application. Alternatively, the Developer should incorporate such a threshold.

Noise Modelling

2.12 The RFI report states within the last paragraph under the heading of Noise Modelling:

> *"To convert the predicted external noise levels to internal noise levels a reduction of 21 dB has been assumed* [within WHO Environmental Noise Guidelines for the European Region]*. This is the value selected in the WHO Europe Night Noise Guidelines for Europe (2009). It is a composite value with an allowance for windows not always being closed. The guidelines note that this is a relatively low value and is subject to national and cultural differences. The assessment therefore makes an allowance for the existing and proposed enhancement of the sound insulation scheme at the airport."*

2.13 It is not clear how the assessment makes an allowance for the existing and proposed enhancement of the sound insulation scheme at the airport, given that these schemes are not proposed to cover the whole study area, nor would insulation be installed at many properties before effects occurred.

2.14 The Developer should clearly set out what values have been used to convert external noise levels to internal levels and justify these, including assumptions about the percentage of time for which windows would be open.

Additional information

2.15 The above awakening assessment, and the application generally, would materially benefit from inclusion of figures showing SEL and L_{Amax} contours for key aircraft types using the northern runway. These have not been included.

Request 3: Baseline years

2.16 Part a of the request with regards to baseline years is, "*a) the baseline figures for 2019 were not used for the purposes of analysis.*"

2.17 The Developer's full response within the RFI report is:

> *"When undertaking environmental assessment, the approach is to set out the current situation and then to consider what may happen in the future with or without the change being sought.*

This allows changes that are going to happen irrespective of the change being sought to be accounted for. Information on the current and past situations is included to provide context but is not part of the analysis. Information on past activity, both in 2018 and 2019 was included in the 2020 EIAR."

2.18 This response would suggest that the current EIAR submitted as a replacement should also consider 2021 or 2022 as the representing the most current situation in order to provide context, rather than relying solely on 2018, which occurred some five (5) years ago.

3.0 Significance Criteria

Absolute Air Noise Impact Criteria

3.1 Table 13-2 of the EIAR sets out the air noise impact criteria for residences:

Table 13-2: Air Noise Impact Criteria (absolute) – residential

Scale Description	Annual dB Lden	Annual dB Lnight
Negligible	<45	<40
Very Low	45 – 49.9	40 – 44.9
Low	50 – 54.9	45 – 49.9
Medium	55 – 64.9	50 – 54.9
High	65 – 69.9	55 – 59.9
Very High	≥70	≥60

3.2 Justification for the above values have been provided and appear reasonable, with thresholds taken from relevant guidance and policy. Comparable schemes in the UK, have used similar thresholds as the above, such as Heathrow's third runway, Gatwick's second runway and Luton's capacity expansion.

3.3 Focussing specifically on night-time noise (given the reasons for this application), comparable thresholds are set out in the table below, with LOAEL[3] approximately equating to "Very Low / Low", SOAEL[4] to "Medium / High" and UAEL[5] to "Very High" thresholds.

3.4 The Consultation Response on UK Airspace Policy 2017 document takes the L_{night} level to be approximately equal to the $L_{Aeq,8hour}$ level without correction. Assuming summer average day ATM numbers are only slightly higher than for the annual average day, values in the table below can be compared against those used within this application.

[3] LOAEL – Lowest Observable Adverse Effect Level
[4] SOAEL – Significant Observable Adverse Effect Level
[5] UAEL – Unacceptable Adverse Effect Level

Table 1 Comparable air noise assessment criteria (dB) - night

Airport	NIGHT		
	LOAEL	**SOAEL**	**UAEL**
Luton DCO (proposed) $L_{Aeq,8hour}$	45	55	63
Gatwick DCO (proposed) $L_{Aeq,8hour}$	45	55	66
Bristol (permitted) $L_{Aeq,8hour}$	45	55	63
Heathrow DCO (PEIR) $L_{Aeq,8hour}$	45	55	66
Stansted (permitted) $L_{Aeq,8hour}$	45	54	63
Luton 19 mppa (permitted) $L_{Aeq,8hour}$	45	55	66

Relative Air Noise Impact Criteria

3.5 Table 13-3 of the EIAR sets out the scale for level of relative change in air noise impact criteria for residences:

Table 13-3: Air Noise Impact Criteria (relative)

Scale Description	Change in noise level, dB(A)
Negligible	0 – 0.9
Very Low	1 – 1-9
Low	2 – 2.9
Medium	3 – 5.9
High	6 – 8.9
Very High	≥9

3.6 This scale is reasonable and mirrors the approach taken at comparable UK airport schemes.

Magnitude of Effect for Air Noise

3.7 Table 13-4 of the EIAR sets out how the above two scales combine to provide the magnitude of effect for air noise on residences:

Table 13-4: Summary of magnitude of effect – air noise

Absolute Noise Level Rating	*Change in Noise Level Rating*					
	Negligible	*Very Low*	*Low*	*Medium*	*High*	*Very High*
Negligible	Imperceptible	Imperceptible	Imperceptible	Not Significant	Slight	Moderate
Very Low	Imperceptible	Imperceptible	Not Significant	Slight	Moderate	Significant
Low	Imperceptible	Not Significant	Slight	Moderate	Significant	Significant
Medium	Not Significant	Slight	Moderate	Significant	Significant	Very Significant
High	Slight	Moderate	Significant	Significant	Very Significant	Profound
Very High	Moderate	Significant	Significant	Very Significant	Profound	Profound

3.8 There is no precise guidance on how this table should be completed, but we note that **the magnitudes put forward by the Developer are likely to underestimate effects in several areas**. We would recommend the amended table below be used instead for the reasons set out below. Where these effect ratings differ from the Developer's scale, they have been highlighted.

Table 2 Alternative summary of magnitude of effect

Absolute noise level rating	**Change in noise level rating**					
	Negligible	**Very Low**	**Low**	**Medium**	**High**	**Very High**
Negligible	Imperceptible	Imperceptible	Imperceptible	Not significant	Slight	Moderate
Very Low	Imperceptible	Imperceptible	Not significant	Slight	Moderate	Significant
Low	Imperceptible	Not significant	Moderate	**Significant**	Significant	Significant
Medium	Not significant	Slight	Moderate	Significant	Significant	Very Significant
High	Slight	**Significant**	Significant	Significant	Very Significant	Profound
Very High	**Significant**	Significant	Significant	Very significant	Profound	Profound

3.9 These changes would bring the magnitude of effect ratings in line with other comparable, recent UK airport schemes and would assist in preventing any underestimating of effects.

3.10 A "Medium" change (3-5.9dB) in noise level resulting in absolute noise levels of "Low" would be classed as significant, rather than moderate. Using the wording within the EIAR Guidelines[6], a 3 dB change is generally taken to lead to an effect which alters a sensitive aspect of the environment but above that which is consistent with existing and emerging baseline trends. Without this change, residences are essentially given the same sensitivity as all non-residential receptors, which isn't justified.

3.11 Where noise levels are "Very High", even a "Negligible" change would be significant, as measures should be in place to avoid these noise effects at any residence already subject to these noise levels. Such an approach would then be in line with Planning Practice Guidance (PPG), which the Developer references themselves.

3.12 The final amendment is a more relaxed suggestion than the above recommendations and is where recent airport schemes have taken changes of "Very Low" noise levels (1dB+) leading to "High" absolute levels to be significant. The Developer should justify why a more cautious approach has not been taken.

3.13 These recommendations would allow for significance to be taken into account from both the EU/598/2014 perspective (in terms of % Highly Annoyed), as well as EIA.

Non-residential Receptors

3.14 The approach for non-residential noise sensitive receptors is a simplified version of that proposed for residences (detailed above). For daytime receptors, an absolute threshold of 55 dB

[6] Guidelines on the information to be contained in Environmental Impact Assessment Reports, May 2022; Environmental Protection Agency

L_{den} is taken, and a change in level of 3 dB or more is also required to give rise to a significant effect.

3.15 There is the potential that some key noise effects are being underestimated through this approach, particularly those that apply to schools.

3.16 Appendix 13A states in section 13A.6.20:

> *"For schools the medium threshold has been based on the guidance in Building Bulletin 93, specifically that the internal noise levels for classrooms and teaching spaces that it contains can be achieved with natural ventilation if the external noise level does not exceed 55 dB LAeq,30min. Reviewing the distribution of flights at Dublin Airport it has been estimated that this criterion corresponds to approximately 55 dB L_{den}, which is the level where WHO 2018 reports evidence of an effect on reading skills and oral comprehension in children."*

3.17 No further information is provided for how this comparison has been reached, which requires additional justification or further supporting evidence.

3.18 Although the application is focussed on night-time operational changes, an increase in flights being able to land at night-time would then enable an increase in day-time departures. This is explicitly stated in section 13.3.7:

> *"The Relevant Action specifically relates to controls at activity at night, however the effect on movements is not confined to the night period, as for example an aircraft that becomes able to arrive at night may then depart during the following day. The L_{den} metric also takes into account activity at night so both it and the L_{night} metric respond to changes in activity at night and so are considered directly relevant."*

3.19 It is possible therefore that large noise changes occur in the daytime without these being demonstrated in the L_{den} metric used by the Developer. This is as a result of the corrections applied to evening and night-time noise components of the metric.

3.20 More information is therefore required to ensure that daytime healthcare facilities and schools are not being unduly disturbed by increases in air noise which have not been identified.

Ground Noise

3.21 No reference appears to be made to ground noise magnitude of effects in the main EIAR body. In Appendix 14A submitted in 2021, the same matrix as that used for air noise above is set out for ground noise.

3.22 This should be updated to match the air noise recommendations provided above with regards to magnitude of effects.

4.0 Limitations and Assumptions

4.1 Section 13.3.43 sets out that some aircraft types currently have limited or no noise data available and assumptions have been made to allow these aircraft to be modelled. The assumptions are set out in the replacement Appendix 13B in Table 13B-14 and section 13B.3.73. These are as follows:

Table 3 Expected Change in Noise Levels between Current and Modernised Aircraft Types

Current Aircraft Type	Modernised Aircraft Type	Expected change in noise levels between current and modernised aircraft types (dB)	
		Arrival	Departure
Embraer E190	Airbus A220-300	-0.1	-3.8
Airbus A330-300	Airbus A330neo	-0.3	-4.7
Embraer E190	Embraer E195-E2	-0.7	-5.7
Boeing 777-200	Boeing 777X	-1.6	-6.4

4.2 It is stated that the first three rows of corrections in the table are based on a comparison of certification information between the current and modernised type.

4.3 For the 777X, noise levels have been based on historic trends of 0.05 dB per year for arrivals and 0.2 dB per year for departures. This has resulted in materially different expected changes for the 777X to the other three types set out in the table above.

4.4 Given that the 777X and the A330neo are comparably sized aircraft, changes in arrival and departure noise levels would be expected to be closer, especially for arrival noise. Comparison against the A350, a comparably sized new generation aircraft, may also assist this exercise.

4.5 We recognise that the 777X represents a small portion of movements, as stated in 13.3.43 of the EIAR. We note, however, that the 777X is a materially larger aircraft than the majority of aircraft in the fleet and would have the potential to increase absolute arrival and departure noise levels.

4.6 In 2035, as set out in Table 13B-4, there are proposed to be 630 movements of the 777X in both the evening and night periods, out of a total of 47,581 and 35,922 movements, respectively. This amounts to 1.3% and 1.75% of fleet movements in the respective time periods. However, in spite of these small percentages, the following factors would mean that the 777X is expected to have an impact on contour sizes:

- the nature of the L_{den} metric, where evening and night-time noise levels have substantial corrections applied;
- the 777X having higher noise levels than the smaller aircraft in the fleet;
- it does not appear that the 777X is modelled with a custom departure profile, which otherwise might be expected to lead to a lower noise impact.

4.7 The noise contours should therefore be updated with more conservative expected changes for the 777X, or it be proved that the 777X has negligible impact on the contour sizes.

4.8 This is an important matter, as more generous expected changes would typically lead to smaller noise contours being signed up to by the Developer. If the expected noise reductions do not materialise, the onus should be on the Developer to keep to the lower noise contours, rather than permitting a larger noise impact on the local community. Any risks associated with not meeting agreed noise limits would rightly be placed on the Developer.

4.9 However, in this instance, it doesn't appear that the Developer is proposing any constraints, operating controls or limits that would ensure the potentially lower noise impact occurs. **The submitted documentation could therefore underestimate the noise impact from aircraft in flight on the local community.**

5.0 Current State of the Environment

2016 Measurements

5.1 The EIAR sets out that the noise climate around Dublin Airport was quantified by a noise measurement campaign in 2016. Comparison between 2016 and 2018 Noise and Track Keeping data from the Airport's monitoring terminals have been compared and the Developer uses this comparison to conclude that the 2016 data is acceptable.

5.2 At no point does the Developer appear to set out what the noise measurements are used for within the noise assessment. We believe that they are merely used to assist in explaining impacts, as it is stated that they are not used for the air noise assessment and that the ground noise assessment has its own survey positions.

5.3 However, irrespective of the purpose for which the noise measurements have been used, they must be considered out of date.

5.4 Tables 13-8 and 13-9 of the EIAR, as shown below, are used to justify that noise levels across the two years are comparable (despite both being over 5 years old now).

5.5 However, examination of noise levels across both years shows that there is not a good correlation between noise levels at locations further away from flightpaths. These noise measurements cannot therefore be used to assist in describing noise impacts and effects in 2018, let alone anything more recent.

5.6 The Developer has not sought to undertake any additional noise measurements in 2022 or 2023, which would be much more beneficial to local communities who are seeking to understand what the proposals mean to them.

5.7 We also note the following points that do not assist in understanding the information presented:

- The measurement positions are referenced by number within the tables and letters within the text.
- Descriptive text is unclear, for example, "*Aircraft noise was occasionally dominant*" in section 13.4.19. This could mean a number of things and does not clarify matters for the reader.
- A measurement position was located in school grounds (River Valley AS11) during term time and it is not clear if measurements of children have been omitted or included in results.

5.8 We also note that the Application is for an expansion of use of the northern runway at night-time; the measurement positions do not focus on specific areas that would be expected to be most significantly impacted, but rather are situated generally all around the Airport.

Table 13-8: Average Measured Noise Levels (2016)

NMT	Daytime Noise Level, dB $L_{Aeq,16hr}$				Night Time Noise Level, dB $L_{Aeq,8hr}$			
	Jan-Jun 2016		Jul-Dec 2016		Jan-Jun 2016		Jul-Dec 2016	
	Total	Aircraft	Total	Aircraft	Total	Aircraft	Total	Aircraft
1	63.8	62.5	63.7	62.4	58.4	57.1	58.1	57.0
2	62.4	60.7	61.8	60.3	56.8	55.4	56.8	55.6
3	62.9	49.6	-	-	54.9	47.0	-	-
4	56.6	41.5	56.8	41.2	52.1	38.3	49.7	39.4
5	54.9	49.2	55.3	48.6	57.3	48.1	51.3	49.7
6	61.6	46.7	58.1	44.2	56.5	45.5	51.6	43.4
20	63.7	57.2	62.4	54.9	57.6	52.2	56.3	50.2

Table 13-9: Average Measured Noise Levels (2018)

NMT	Daytime Noise Level, dB $L_{Aeq,16hr}$				Night Time Noise Level, dB $L_{Aeq,8hr}$			
	Jan-Jun 2018		Jul-Dec 2018		Jan-Jun 2018		Jul-Dec 2018	
	Total	Aircraft	Total	Aircraft	Total	Aircraft	Total	Aircraft
1	63.9	62.8	64.0	62.9	58.9	57.2	58.1	56.6
2	61.1	60.5	61.9	61.1	56.5	54.9	57.5	56.5
4	57.2	46.9	55.3	43.8	54.2	36.7	51.0	33.7
5	58.3	49.5	54.8	48.5	55.1	50.2	54.3	50.4
6	57.7	45.8	60.9	48.9	58.0	45.1	59.2	47.0
20	64.3	58.7	63.4	59.6	58.6	47.7	58.9	54.8

Permanent Noise Monitors

5.9 In addition to the monitoring set out above, there were seven permanent noise monitors installed in 2016 (noting 21 and 22 are mobile locations). Locations can be seen in the image below.

Figure 13-2: Permanent Noise Monitoring Terminals at Dublin Airport (2018)



5.10 The results of measurements at these noise monitors can be seen in Tables 13-8 and 13-9 above for January to June and July to December 2016. This approach is adopted due to the data being reported biannually and it is stated in section 13.4.29 that, "*These averages are not directly comparable to noise contours produced by computer modelling as noise contours are typically based on an average summer or annual day*, *and also include all aircraft movements rather than just those which produce a correlated noise event*".

5.11 If an aircraft has not generated a noise level high enough to be a correlated event, then it is unlikely to have an impact on a noise contour and this reason does not seem to warrant much weight.

5.12 The other reason given for why these noise levels cannot be compared to noise contours is that no effort has been made to translate the data provided by the noise monitors into summer and annual periods, which clearly should be possible with the data held. Direct comparison would then be possible, and the data would add some value to the document.

6.0 Air noise model

Flightpaths

6.1 The air noise modelling methodology is set out in Appendix 13B and has been materially updated following the previous submissions.

6.2 The original northern runway application[7] stated in section 16.1.3.4:

> *"The flight tracks associated with the existing 10/28 runway, the existing 16/34m runway and the existing 11/29 runway are in accordance with AIP Ireland as published by the Irish Aviation Authority. For the proposed runway, it was assumed that the aircraft would join up with the tracks used for the existing 10/28 runway which was agreed with the Irish Aviation Authority to be a reasonable assumption at this stage."*

6.3 For the 2021 application, the original Appendix 13B sets out a high level of detail of how the flightpaths were considered within the model, culminating in section 13B.3.42:

> *"A set of departure routes from the North Runway was then developed that replicated the current routes as closely as possible, while allowing for these initial turns."*

6.4 The noise assessments for both applications are based on these two different sets of assumed flightpaths.

6.5 The northern runway first began operations at the end of August 2022. Updated departure routes on the northern runway were implemented on 23rd February 2023, six months later.

6.6 The actual flown radar data associated with these most up to date flightpaths has been used in the latest noise modelling, an approach we consider correct.

6.7 It is not clear whether any noise assessment has been undertaken to quantify the impacts of the northern runway based on the actual flown flightpaths. This could result in additional or different significant impacts being identified, which then impacts on the acceptability of the scheme set out in the latest application.

6.8 We note that, due to the fact that different flightpaths were being flown compared to those described to the local communities, material time and financial outlay has been spent in attempting

[7] Dublin Airport Environmental Impact Statement Northern Parallel Runway Part 2 – Text; 2004

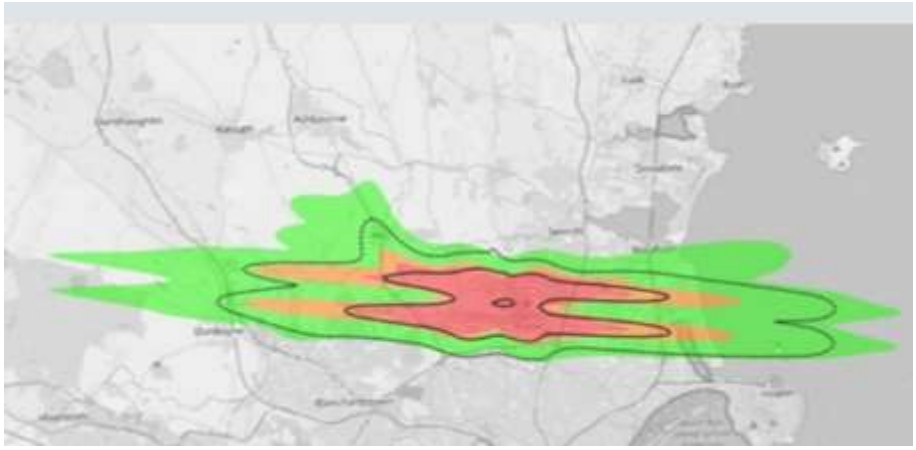
to demonstrate the noise impacts actually occurring. Long-term unattended noise monitoring was commissioned by our client at three locations to the west of the northern runway, in order to highlight that the noise levels reported in the 2021 application were not what was occurring in reality.

6.9 The EIAR assessment has now been updated, with stronger correlation between measured and modelled noise levels, but the point remains that there needs to be a higher degree of certainty available to local residents as to the noise levels to which they will be subject. There are lingering concerns about the accuracy of modelling of northern runway departures. Additional controls have been recommended later in this note.

6.10 While the flightpaths may have been updated, there is a knock-on effect on information based on these. The Airport Noise Zones, which assist residential developers in knowing what level of insulation would be required and where development would be resisted, no longer cover the expected impacts of this proposal.

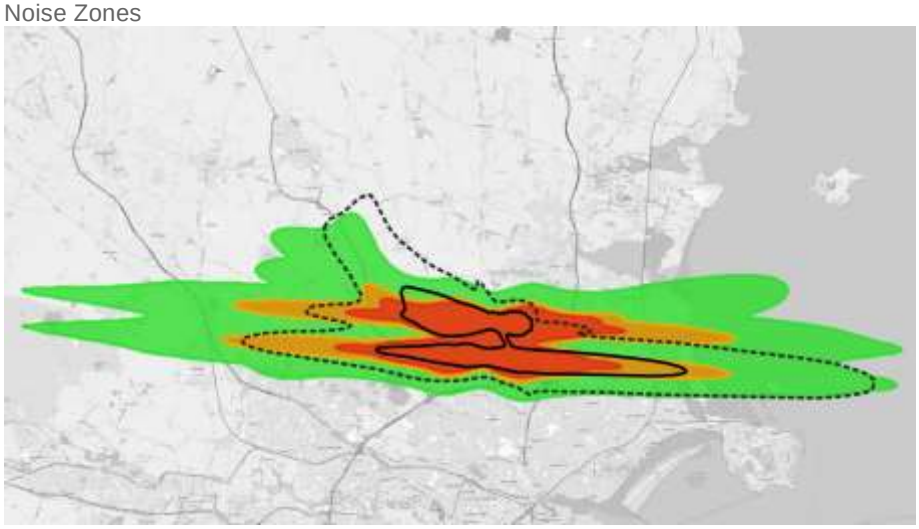
L_{night} contours against Noise Zones (previously)

Black dotted line showing 48 dB contour; black solid line showing 55 dB; green, orange and red areas are Noise Zones



L_{night} contours against Noise Zones (current)

Black dotted line showing 48 dB contour; black solid line showing 55 dB; green, orange and red areas are Noise Zones

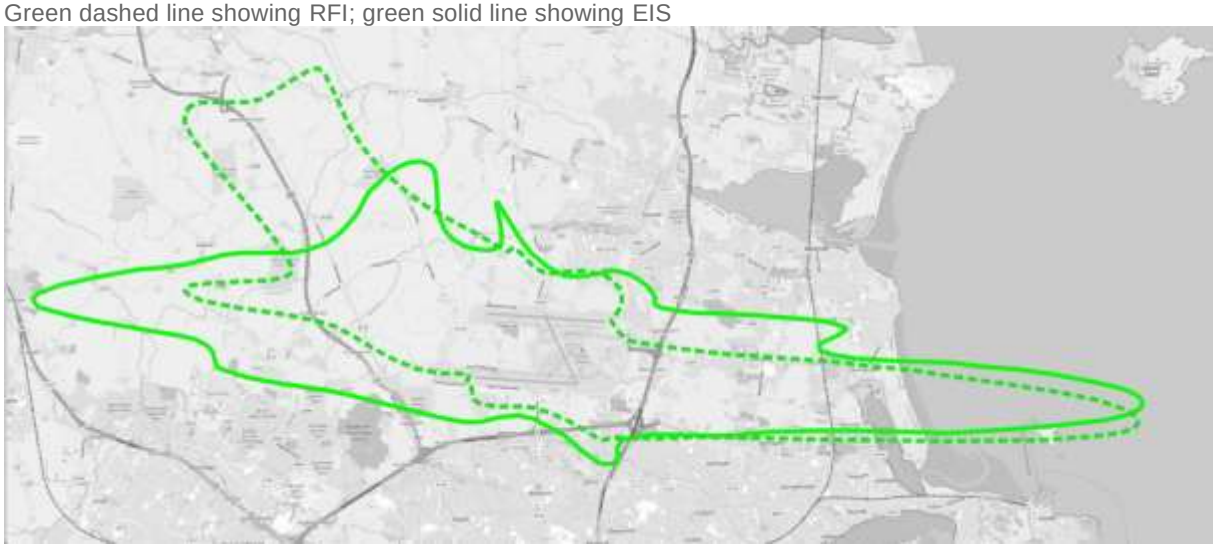


6.11 The current proposals show that the 55 dB L_{night} contour (marking significant adverse effects at night) now falls outside the Red Zone (where development would be resisted). The 48 dB L_{night} contour falls outside the green zone, where noise sensitive development would be managed and is expected to need noise insulation incorporated.

6.12 Not only is there the obvious concern that properties now proposed to be covered by noise contours outside of zones may not be appropriately designed, but there is also the substantial, more hidden, risk that properties are also affected by daytime noise from the second runway but were not considered by the 2007 permission assessment. The figures below demonstrate this by showing the current proposals (RFI) against the 2007 permission (original EIS).

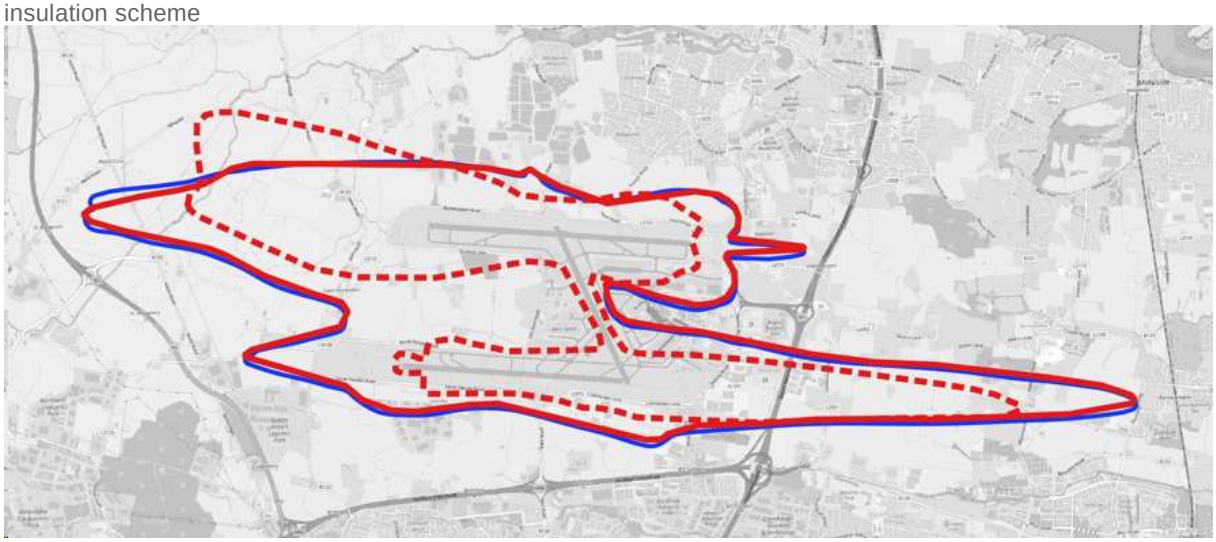
$L_{Aeq,16hour}$ 54 dB contours from current proposals against original

Green dashed line showing RFI; green solid line showing EIS



$L_{Aeq,16hour}$ 63 dB contours from current proposals against original

Red dashed line showing RFI; red solid line showing EIS; blue solid line showing existing residential sound insulation scheme



6.13 As can be seen in the four figures above, significant noise effects are expected during both the day and night-time in areas not covered by any sound insulation scheme.

Validation

6.14 Given the uncertainty with flightpaths, it is of concern that only one portable noise monitor has been used to validate northern runway movements. It is assumed this is Location 21 shown on Figure 13-2 above, but this is not explicitly stated.

6.15 The focus of this application is to increase movements on the northern runway, yet little attention appears to have been paid to ensuring this aspect of the noise model is as accurate as possible.

6.16 The Airport has been instructed by ANCA to install and maintain 23 noise monitoring stations by 24 August 2024, 15 of which are currently in place. Multiple noise monitors are now installed to the west of the northern runway, allowing such a validation to take place, especially considering the tight turn some of these aircraft are undertaking on departure.

6.17 Monitoring has been undertaken by the client at three locations over the 92-day summer period, as detailed in the three Technical Notes produced by Wave Dynamics Acoustic Consultants. These notes highlight differences in the noise levels used to produce the Developer's noise contours and those measured. The notes are included within the submission and are titled '*Noise Survey and Assessment*', with references '*WDA230104_1*', '*WDA230104_11*' and '*WDA230104_13*'.

6.18 It is clear that further validation of the noise model should be sought, to ensure noise effects are not being underestimated anywhere within the study area.

7.0 Noise Insulation

Current Residential Sound Insulation Scheme (RSIS)

7.1 As set out in section 13.6.13 of the EIAR, the existing insulation scheme for residences covers the 63 dB $L_{Aeq,16hour}$ contour. This would represent the absolute minimum requirement for a UK airport and the threshold is expected to be lowered to 60 dB $L_{Aeq,16hour}$ in upcoming policy releases.

7.2 Both the recent applications for Luton and Gatwick Airports are proposing Noise Insulation Schemes which offer compensation for mitigation down to the 54 dB $L_{Aeq,16hour}$ contours, with a tapering grant size.

7.3 Section 13.6.14 states that participation in the scheme is 98%, but this includes 17% of households not participating "*because of ongoing legal action at the time they were contacted, and their later request to extend the opt-in deadline could not be accommodated*". It should therefore only be assumed that 81% of properties are in line to receive the noise insulation works, and it is not made clear when these properties will actually have the insulation installed.

Current Schools Sound Insulation Scheme (SSIS)

7.4 As set out in section 13.6.20 of the EIAR, the existing insulation scheme for schools covers the 60 dB $L_{Aeq,16hour}$ contour and aims to design schools to levels no higher than 45 dB $L_{Aeq,8hour}$ (over a typical school day).

7.5 The EIAR recognises in setting thresholds for schools that the $L_{Aeq,30minutes}$ metric is most appropriate for schools, and it is not clear if this is achieved by the works.

Dwelling Purchase Scheme

7.6 A scheme to purchase dwellings within the 69 dB $L_{Aeq,16hour}$ contour is available, which is also standard practice.

Proposed Night Scheme (RSIGS)

7.7 Section 13.8.1 states:

> *"In addition to the mitigation measures already in place at Dublin Airport which are detailed in Section 13-6, as part of this application the Applicant is proposing the following mitigation measures and controls which will help to ensure that the noise effects assessed in the EIAR are not exceeded:*
>
> - *A night noise insulation scheme.*
> - *A detailed framework for monitoring the noise performance of Dublin Airport."*

7.8 A night noise insulation scheme should be on offer to "avoid and reduce" significant effects, rather than to ensure the assessed noise effects are not exceeded. It is clear that additional limits should be enforced to ensure assessed noise effects are not exceeded, and the RSIGS should be expanded to minimise significant effects.

7.9 The eligibility thresholds for the proposed RSIGS are:

- Exposed to night-time noise levels of at least 55 dB L_{night} once the North Runway is operational,
- or exposed to a "very significant" rating arising from forecast noise levels of at least 50 dB L_{night} in the first full year when the Relevant Action comes into operation, with a change of at least +9 dB when compared with the current permitted operation in the same equivalent year. For the purpose of this assessment a comparison of the 2025 Permitted and Proposed Scenarios has been used to estimate which dwellings would be eligible.

7.10 This is as per section 13.8.2, which also states that a grant of up to €20,000 would be available per property.

7.11 Section 13.8.5 states:

> *The basis for 55 dB L_{night} as a criterion is that it is the level at which a high impact arises. This follows from the 2009 WHO Night Noise Guidelines which describe it as the threshold at which "Adverse health effects occur frequently" and "a sizeable proportion of the population is highly annoyed and sleep disturbed". The noise level is also comparable with the level of 55 dB $L_{Aeq,8h}$ commonly used at airports in the UK for eligibility for sound insulation schemes.*

7.12 55 dB $L_{Aeq,8hour}$ is commonly used at UK airports, as this is taken to be the SOAEL at night, above which significant effects are predicted meaning that mitigation must be applied to avoid these effects.

7.13 The Developer does not seek to address the significant effects predicted in the EIAR, only those rated "very significant" or "profound".

7.14 Under section 3.8 Mitigation and Monitoring of the EPA's EIAR Guidelines, it quotes Annex IV(7) of the amended directive for such assessments:

> *"A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment…"*

7.15 The Developer has not included any avoidance, preventative measures, or noise reductions to those expected to be impacted by significant changes in noise levels. This falls short of the requirements.

7.16 For instance, as per Table 13-46, the locations at Tyrellstown and Ridgewood would be subject to changes in noise level of +12 dB and +11 dB L_{night}, with the absolute noise level rising to 47 dB L_{night} at both locations.

7.17 As per the Developer's own magnitude of effects (table 13-4), this amounts to a significant effect, yet no mitigation would be proposed.

7.18 Indeed, as per the Developer's own statements in section 13.9, the insulation is only assumed to offer a 5 dB(A) reduction in noise, meaning that even with insulation installed, residents at these two locations would still be subject to significant effects.

7.19 There are multiple other locations in Table 13-46 that would be subject to a significant effect, even before taking into account our views on the potential underestimation of these effects set out above, yet none would receive noise insulation grants.

7.20 There is also a clear argument to be made that the significant effects are assessed using the L_{den} metric, which is expected to cover a larger extent than the corresponding $L_{Aeq,16hour}$ metric, meaning that the RSIGS should incorporate qualifying criteria that use the L_{den} metric to ensure all significant effects are covered.

7.21 No information has been provided highlighting which dwellings the noise insulation scheme applies to in the replacement EIAR, as was provided in the original application.

7.22 The proposed noise insulation scheme should be materially enhanced, to ensure that all significant effects are avoided, prevented or reduced.

7.23 Noting that the Airport's masterplan is to expand capacity to allow a higher passenger throughput, **it would likely also be sensible to enhance the Dwelling Purchase Scheme**. Without this, there is potential for multiple smaller noise increases over time to build up to profound effects, without these being properly quantified. All the while, residents would be living in properties with potentially falling values due to the airport's increasing emissions.

7.24 It is also not clear whether any allowance has been made **to insulate the residential healthcare facilities subject to significant effects**. This represents another shortcoming of the application.

7.25 Every effort must be made to insulate qualifying properties in good time before they actually experience significant effects, expected to occur in 2025 (two years in the future). It is anticipated to be unlikely that this will occur, especially as the current noise insulation works are also ongoing. **This must be seen as a material shortcoming of the scheme**.

Residual Effects

7.26 It is not clear how the figures in Table 13-52 have been calculated, as it appears that the benefits of sound insulation schemes have been applied to properties but this is not explicit. More information should be provided to show which properties have been assumed to have received noise insulation, which have already benefitted, and which simply will not qualify.

7.27 We also note it is not possible to identify any properties on the provided contours due to the low-quality resolution of the base maps. We would request updated figures in which high resolution mapping shows residential properties, preferably on an individual basis.

7.28 Ultimately, Table 13-52 identifies that 371,883 people will experience some degree of noise change (both positive and negative) and that approximately 9,000 people will experience significant residual adverse effects.

Table 13-52: 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
2025	7,047	10	371,883	6,414	8,970	206,643
2035	102	0	236,946	94	8,301	111,182

7.29 We also note that within section 2.3 of EPA's EIAR Guidelines it states:

"Significant adverse effects identified in the EIAR can also be used as reasons for a decision to refuse consent."

7.30 Section 3.9.1 of the same document then states:

"It will not always be possible or practical to mitigate all adverse effects. The effects that remain after all assessment and mitigation are referred to as 'Residual Effects'. These are the remaining environmental 'costs' of a project that could not be reasonably avoided. ***These are a key consideration in deciding whether the project should be permitted or not.****" (our emphasis)*

8.0 Noise Abatement Objective

8.1 The objectives of the NAO set for Dublin Airport are:

The number of people highly sleep disturbed and highly annoyed shall reduce so that compared to conditions in 2019:

• 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

and;

• The number of people exposed to aircraft noise above 55 dB L_{night} and 65 dB L_{den} shall be reduced compared to 2019.

8.2 We understand that Dublin Airport was in breach of its 32 million passengers per year cap in 2019 and that noise at Dublin is expected to increase up to 2025 before having to reduce.

8.3 The NAO reductions are only met by this application if future residential developments are not accounted for in the comparison (i.e. the 2019 baseline figures are used). One might expect this approach, given that these developments are outside the control of the Airport, but it does not account for noise above the significant effect thresholds extending beyond the Airport Noise Zones

[*see Section 6.11 above*], nor the shortcomings of the Airport's insulation schemes [*see Section 7: Noise Insulation*].

8.4 Until the Airport's noise insulation scheme is materially improved to cover the whole of the qualifying area, the application cannot be considered to be compliant with the NAO in our view.

8.5 We note that ANCA have also stated that the NAO was not achieved in 2022, as set out in their report, '*A review of the effectiveness of noise mitigation measures at Dublin Airport for the year 2022 on achieving the noise abatement objective*', dated 27 July 2023. This report highlights an issue raised within this note, in that the noise mitigation measures in place cannot be taken to be effective.

9.0 Proposed Constraints

Noise Insulation Scheme

9.1 As was included within the second runway permission, a condition should be attached that ensures noise insulation is applied to all dwellings (who voluntarily accept the offer) within the 55 dB L_{night} contour, or who would be exposed to significant increases in noise, before the northern runway can operate at night.

9.2 Our comments on expansion of the voluntary purchase scheme may also mean that a similar condition is required to ensure any purchasing offers are made in advance of the scheme beginning.

ATM Cap

9.3 A Quota Count (QC) control is proposed, and is discussed in the section below. This control is best supplemented by a cap or limit on the number of movements allowed over the same timeframe. A movement cap is simple, easily enforceable and transparent and should be included to provide certainty to local communities.

9.4 A movement cap also can be considered to address the often-stated view of those living near to an airport that the number of flyovers is a key consideration, irrespective of the noise generated by these movements.

9.5 When implemented with a QC control, a movement cap provides a backstop. Should the QC sufficiently incentivise aircraft with reduced noise levels, benefits can be shared between the Airport and the local community by the movements cap ensuring a limit to the additional flights allowed under the QC scheme.

9.6 Movement limits are in place at Stansted, Gatwick and Heathrow Airports for precisely these reasons, fitting alongside their summer and winter QC 'budgets'. A movement cap should be imposed on Dublin Airport if this application is approved.

QC and Shoulder Period Movement Cap

9.7 A night-time QC budget is proposed for Dublin Airport, named the Annual Noise Quota (ANQ). This was previously proposed over the core night period of 2330 to 0600, but has been updated to the whole night period of 2300 to 0700, given that it is proposed to replace the 65 flights a night average limit over the whole night period.

9.8 There may be benefit in reverting to an ANQ in the core night period (2330-0600) while placing a separate control (whether QC or movement cap) on the shoulder periods. This would ensure that movements are subject to reasonable controls in the shoulder periods, when sleep is potentially more subject to disturbance. A more precise approach to noise controls through several limits would provide additional protection to key noise-sensitive periods.

9.9 The existing limit for the core night is an ANQ of 7,990, which it is proposed be increased to 16,260 over the whole night period. Given that the proposed change is from an average of 65 flights per night on one runway (maximum 23,725 movements per year), there is clearly no consideration given to limiting flights.

9.10 **Given that this note sets out multiple shortcomings associated with this latest application, it is clear that a more comprehensive assessment is required in all regards to ensure that noise effects are not being underestimated and the local population is not exposed to levels of noise higher than are represented by the application.**

Technical Note

Project:	Ballystrahan, Saint Margarets, Dublin	**Title:**	Noise Assessment
Job Number:	WDA230104	**Prepared By:**	Wil Oshoke
Date:	11/12/2023	**Reviewed By:**	Sean Rocks
Reference:	WDA230104TN_13_B_01	**Client:**	Pearse Sutton

1 Introduction

Following the commencement of operations of the new Dublin Airport North Runway, Wave Dynamics were engaged by Pearse Sutton to assess the noise levels from aircraft flyovers using long-term (92 Day) noise monitoring at Ballystrahan, Saint Margarets, Dublin, K67 KN88.

The objective of the assessment was to quantify the existing noise environment and the current noise levels from aircraft noise during the operation of the North Runway. The measured noise levels have been compared with the predicted noise levels from the DAA noise contours and industry criteria.

1.1 Statement of Competence

This assessment and report were completed by Wil Oshoke, Principal Consultant with Wave Dynamics, who has extensive experience assessing noise impact. His qualifications include a PhD in Acoustics (Dublin City University – School of Electronic Engineering). Wil is a member of Engineers Ireland (MIEI), a Corporate member of the Institute of Acoustics (MIOA), and a Chartered Engineer (CEng) with the UK Engineering Council Via the Institute of Acoustics.

The assessment and report were peer-reviewed by Sean Rocks, Director | Senior Consultant; Sean has experience with aircraft noise, particularly for planning and complaints investigation. Sean's qualifications include a BEng (Hons) in Mechanical and Manufacturing Engineering, a Diploma in Acoustics and Noise Control (Institute of Acoustics), an IOA Certificate of Competence in Environmental Noise Measurement and SITRI certified sound insulation tester. Sean is a member of both Engineers Ireland and the Institute of Acoustics.

This project was led by James Cousins, Managing Director | Principal Consultant with Wave Dynamics who has extensive experience in assessing noise and vibration from road and rail infrastructure on commercial and residential developments. James is an experienced consultant. His qualifications include; BSc (Hons) in Construction Management and Engineering, Pg Cert in Construction Law and Diploma in Acoustics and Noise Control (Institute of Acoustics) and an IOA Competence Cert in Building Acoustic Measurements. James is a member of both Engineers Ireland (MIEI) and the Institute of Acoustics (MIOA) and is the current SITRI Chairman.

2 Baseline Noise Survey

Attended and unattended noise surveys were undertaken to quantify the noise levels from aircraft flyovers at the residence of Pearse Sutton K67 KN88. The attended noise measurements were conducted from 16:55hrs to 19:35hrs on the 12th of September 2023 and 12:50hrs to 13:50hrs on the 14th of September 2023. The unattended noise measurements were taken continuously from 00:00hrs on the 14th of June 2023 to 20:00hrs on 17/09/2023. Sound exposure level measurements were taken for aircraft flyovers during the attended survey.

2.1.1 Site Description and Measurement Locations

The site is on the R122 in Ballystrahan, Saint Margarets, Dublin, as shown in Figure 1 below. The area is mainly agricultural, with sporadic residential dwellings and commercial properties. Dublin Airport is located to the residence's southeast, approximately 1.2 km from the edge of the new North Runway.



Figure 1: Site location and monitoring location L1 and SEL measurement location A1.

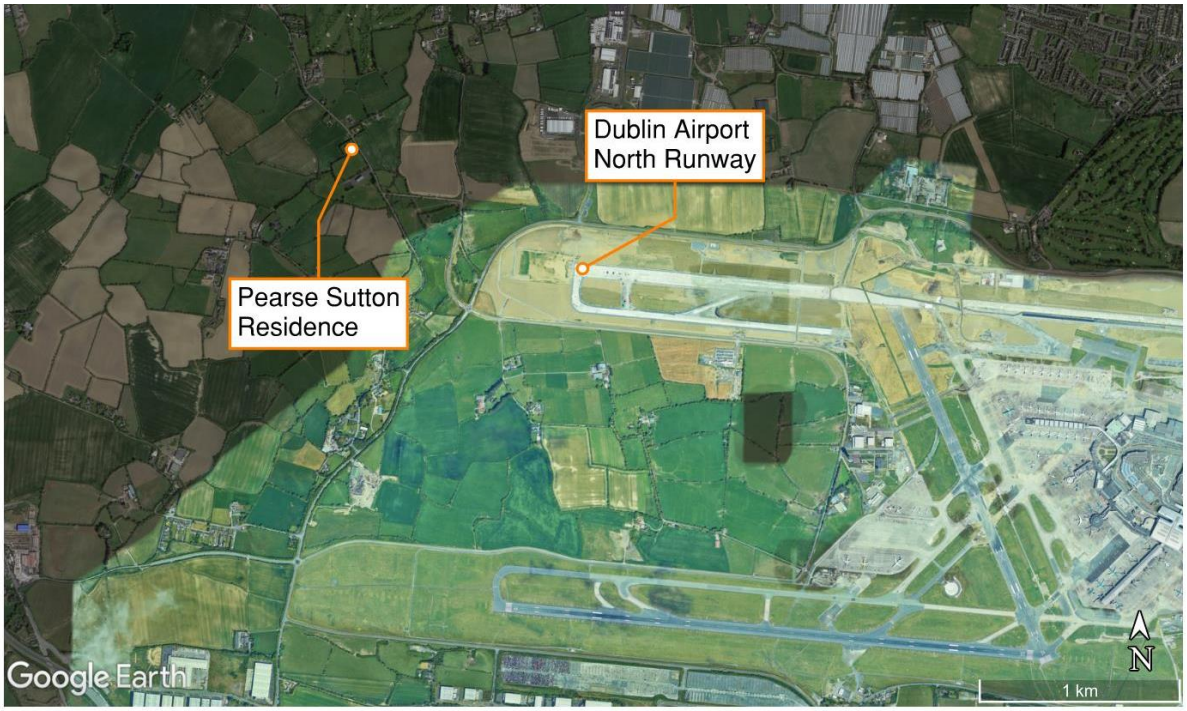


Figure 2: Site location in Relation to Dublin Airport and the new North Runway.

Unattended Noise Measurements

An unattended noise logger was deployed in location L1, as per Figure 1, to the rear garden of the residence. The logger was calibrated before and after the measurements, and no significant drift was noted. The logger was deployed at a height of approximately 4 m above the ground.

On review of the measurement data by WDA, days of unsuitable weather conditions had a negligible effect on the daily $L_{Aeq,16hour}$ values and $L_{Asmax,1min}$ measurements. It should be noted that the monitor stopped recording from 16:12hrs on 25 June to 22:03hrs on 26th June 2023. One night (night starting 18th of August) was affected by extraneous noise which has been filtered.



Figure 3: Noise Logger Setup

2.1.2 Survey Period

Based on the data review, the measurements commenced at 00:00hrs on Wednesday, the 14th of June 2023 and finished at 20:00hrs on Sunday, the 17th of September 2023. The measurement duration was set to 1-minute intervals. It is understood that the North Runway was operational throughout the measurement period, initially between 09:00hrs and 20:00hrs until 4 July 2023, after which the operating hours of the North Runway were 07:00hrs to 23:00hrs.

The measurement period was set in line with Dublin Airport's busiest 92-day period, 16th of June to 15th of September, around which the DAA contour maps are developed. Many of the Dublin Airport planning conditions have been set based on the predictions of noise levels over this 92-day period such as the home insulation scheme. The unattended noise monitoring undertaken allows for direct comparison of the measured noise levels to the DAA noise contour maps.

2.1.3 Noise Measurement Equipment

A Class 1 sound level meter/noise logger, in general accordance with IEC 61672-1:2013, was used for the attended measurements. Table 1 below summarises the measurement equipment used.

Table 1: Noise Measurement Equipment

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Sound Level Meter	SLM4	Nti XL2-TA	A2A-23316-E1	UK-23-100	01/09/2025
Calibrator	CAL1	Nor 1251	31056	AC230226	16/10/2024
Noise Monitor	-	EM2030-AO	01639	2201639	16/02/2024
Calibrator	Cal 2	Cirrus	99866	183284	16/11/2023

2.1.4 Subjective Noise Environment

Based on the information provided during the attended noise survey and logger deployment, the following noise sources were identified:

- Aircraft Noise from Aircraft Fly Overs.
- Road noise from the R122
- Birdsong
- Occasional activity from residents (cars arriving/departing, voices, etc.)

2.2 Noise Measurement Results

This section outlines the results of the attended noise survey.

Unattended Monitoring Results

Table 4 in Appendix C of this report outlines the results of the noise levels recorded at the noise monitoring location L1 over the full monitoring period averaged over the following periods:

- $L_{Aeq,16hour}$ 07:00 – 23:00
- $L_{Aeq,8hour}$ 23:00 – 07:00

Figure 4 below highlights each of the daytime $L_{Aeq,16hour}$ values and the number of times they occur over the full 92-day monitoring period. The graph indicates a significant modal value of 70 dBA with a total of 24 occurrences, with the next highest value at 69 dBA (23 occurrences).

Based on the daily $L_{Aeq,16hour}$ measurements undertaken at the Pearse Sutton residence as shown in Figure 4, the logarithmically averaged $L_{Aeq,16hour}$ for the full 92-day period is 68dBA.

A full breakdown of all the unattended measurement results is available on request.

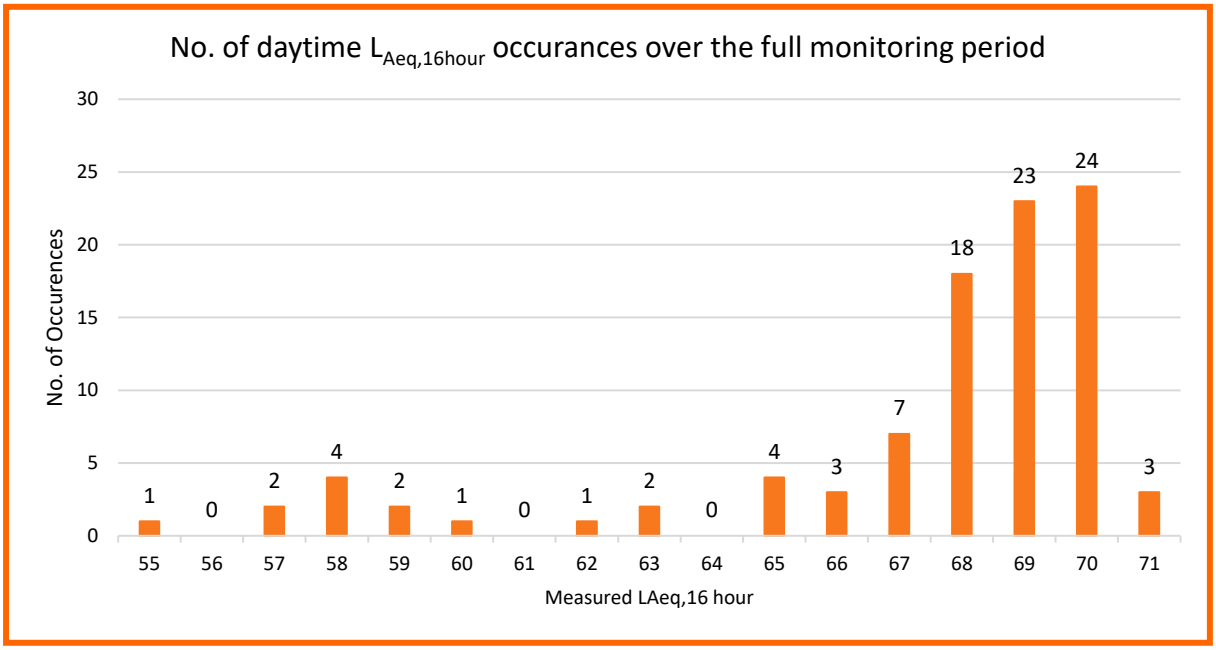


Figure 4: Number of daytime $L_{Aeq,16hour}$ occurrences over the full monitoring period

Attended Monitoring Results

Table 2 outlines the results of the attended measurements for aircraft flyover noise levels at location A1. The flyover sound exposure levels have been calculated from the measured L_{Aeq} levels.

The sound exposure level (SEL) from aircraft flyovers has been calculated using the following equation to allow direct comparison of the measured levels with the DAA predicted SEL contour maps:

$$L_{AX} = LAeq + 10*\log_{10}(d1/d2) - 10*\log_{10}(N) + 10*\log_{10}(T)$$

Where:

L_{Ax} measured SEL
N number of vehicle movements
T time (seconds)
d1 distance from the source to the receiver
d2 distance from the source to the measurement

Table 2: Aircraft Flyover Noise Levels

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level
Location	Date	Time (hrs)	Duration (sec)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
A1	12/09/2023	17:00	32	Airbus A330-302	84	92	99
A1	12/09/2023	17:02	24	Embraer E190SR	75	81	88
A1	12/09/2023	17:04	26	Boeing 737-8AS	76	84	91

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level
Location	Date	Time (hrs)	Duration (sec)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
A1	12/09/2023	17:08	25	Airbus A320-232	73	78	86
A1	12/09/2023	17:10	34	Airbus A330-302	78	86	93
A1	12/09/2023	17:12	27	Airbus A330-302	83	91	97
A1	12/09/2023	17:18	31	Airbus A320-214	78	86	92
A1	12/09/2023	17:19	26	Boeing 737 MAX 8-200	73	79	87
A1	12/09/2023	17:23	31	Mitsubishi CRS-2COER	65	72	80
A1	12/09/2023	17:25	36	Boeing 737-8AS	76	83	92
A1	12/09/2023	17:26	24	Airbus A321	74	79	88
A1	12/09/2023	17:28	29	Airbus A320-214	76	83	91
A1	12/09/2023	17:33	31	Airbus A320-214	78	84	93
A1	12/09/2023	17:34	30	Airbus A320-214	77	83	92
A1	12/09/2023	17:36	30	ATR 72-600	65	72	80
A1	12/09/2023	17:38	26	Boeing 737 MAX 8-200	71	77	85
A1	12/09/2023	18:45	28	Airbus A320-231	77	83	91
A1	12/09/2023	18:46	32	Boeing 767	75	80	90
A1	12/09/2023	18:59	31	Boeing 737-800	75	82	90
A1	12/09/2023	19:02	25	Boeing 737-8200	70	76	84
A1	12/09/2023	19:04	40	Boeing 737-8AS	76	83	92
A1	12/09/2023	19:05	33	Airbus A320	77	83	92
A1	12/09/2023	19:07	29	Aerospotiale	64	68	79
A1	12/09/2023	19:08	33	Airbus A320	78	83	93
A1	12/09/2023	19:11	43	Boeing 737-8AS	76	83	92
A1	12/09/2023	19:13	32	Aerospotiale	65	70	80
A1	12/09/2023	19:14	42	Airbus A320	75	82	91
A1	12/09/2023	19:19	35	Airbus A320-214	77	82	92
A1	12/09/2023	19:23	43	Embraer 190-100IR	74	82	90
A1	12/09/2023	19:27	31	Boeing 737-8	69	77	84

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level
Location	Date	Time (hrs)	Duration (sec)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
A1	12/09/2023	19:31	33	Embraer 190	75	82	90
A1	14/09/2023	19:34	31	Boeing 737-8AS	78	86	93
A1	14/09/2023	12:54	34	Boeing 737-8AS	77	84	92
A1	14/09/2023	12:56	30	ATR 72-600	66	73	81
A1	14/09/2023	12:59	32	Airbus A220-300	71	79	86
A1	14/09/2023	13:00	30	Airbus A220-214	77	84	92
A1	14/09/2023	13:02	29	Airbus A220-300	74	83	88
A1	14/09/2023	13:04	32	Boeing 737 MAX 8-200	72	79	87
A1	14/09/2023	13:06	34	Airbus A320-214	75	83	90
A1	14/09/2023	13:08	33	Airbus A321-253NX	74	81	90
A1	14/09/2023	13:10	22	Airbus A320-232	76	82	90
A1	14/09/2023	13:12	22	Boeing 737 MAX 8-200	73	78	86
A1	14/09/2023	13:16	35	Golfstream G550	74	83	89
A1	14/09/2023	13:17	32	Boeing 737 MAX 8-200	70	76	85
A1	14/09/2023	13:20	27	Boeing 737 MAX 8-200	71	78	85
A1	14/09/2023	13:22	33	Dassault Falcon 2000 EK	74	82	89
A1	14/09/2023	13:23	34	ATR 72-600	66	72	81
A1	14/09/2023	13:35	36	Airbus A320-214	76	84	91
A1	14/09/2023	13:37	40	Airbus A320-214	77	86	93
A1	14/09/2023	13:39	33	Airbus A321-27INK	75	83	90
A1	14/09/2023	13:40	40	Boeing 767-332(ER)	79	87	95

1. SELs calculated on the rounded L_{Aeq} values measured.

3 Analysis of Results

3.1 $L_{Aeq,16hr}$ Noise Levels

The most recently predicted noise contours for the North Runway operation as per the 2007 planning permission are the compliance contours submitted to Fingal County Council in 2016. Here, the predicted $L_{Aeq,16hour}$ (07:00hrs to 23:00 hrs) noise contours for Dublin Airport with the North Runway operational can be seen in Figure 5. The noise contours are developed by DAA based on the busiest 92-day period of the year for the airport, 16th June to 15th September.

Based on the DAA contour maps, Pearse Sutton's residence is on the 63dB predicted contour. From the results of the unattended noise monitoring outlined in Table 4 (see Appendix C), the corresponding $L_{Aeq,16hour}$ averaged over the same 92-day period as the DAA contour maps are 68dB with a modal value of 70dBA. This demonstrates that the measured levels at the residence exceed the predicted levels by 5dB when compared to the 92-day monitoring period on which the contours are based.

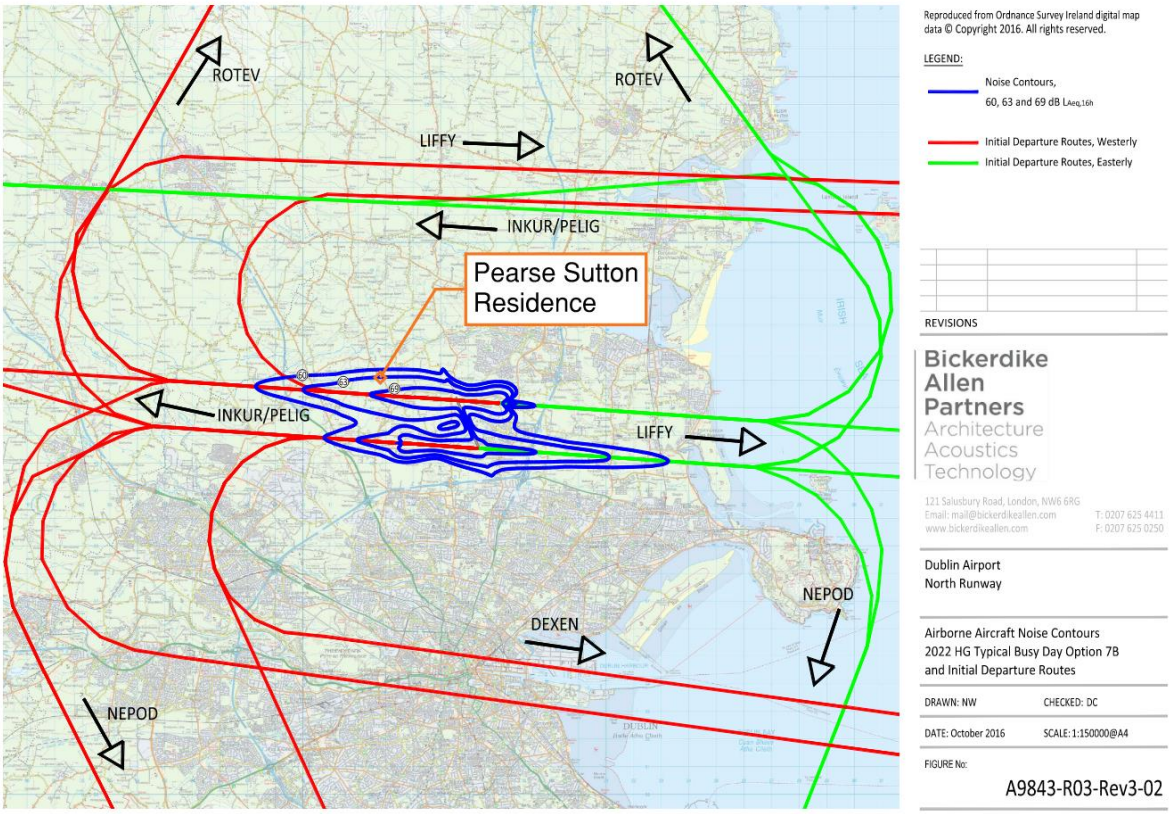


Figure 5: Predicted $L_{Aeq,16hour}$ (07:00 – 23:00) airport noise contours with North Runway in operation.

Noise contour maps presented in the most recently submitted EIAR supplement by DAA provided to ABP place Pearse Sutton's dwelling in the 63-65dB $L_{Aeq,16hr}$ contour for the 2025-year scenario. Given that the measurements during the summer of 2023 find noise levels are 68dB $L_{Aeq,16hr}$ it would indicate that the predicted noise contours from the aircraft flyovers do not match the actual measured values. This would place doubts on the accuracy of the predicted DAA contours when compared to real live measured data.

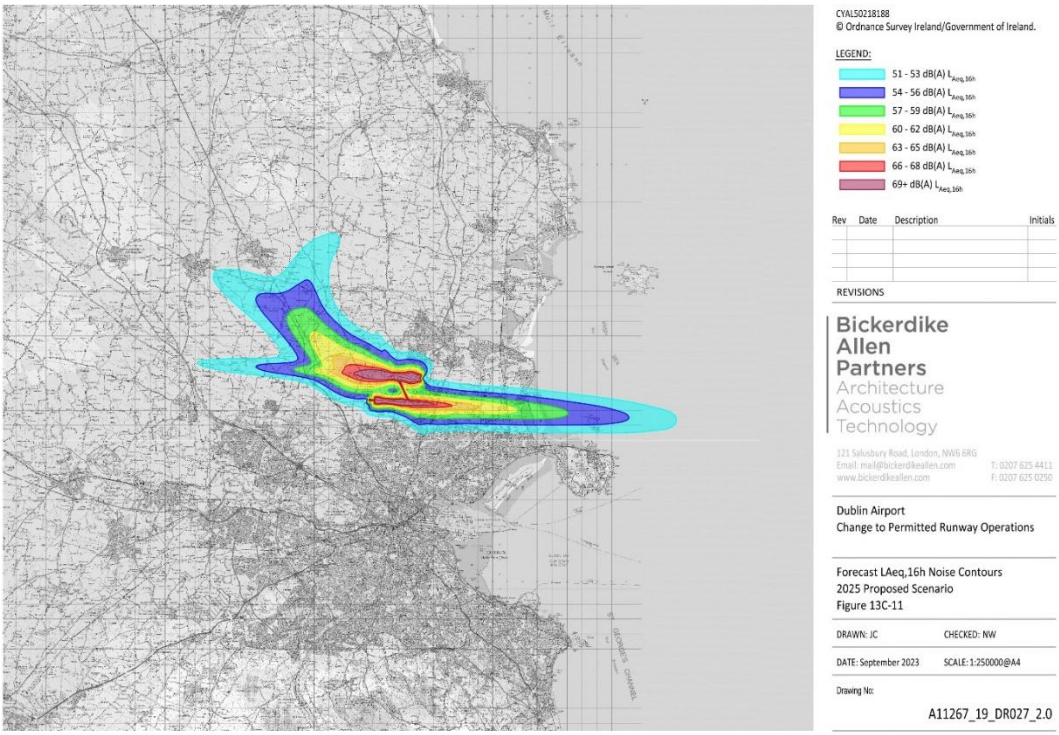


Figure 6: DAA predicted LAeq,16hour (07:00 - 23:00) airport noise contours for 2025.

3.2 L_{night} Noise Levels

As discussed the measured L_{night} noise levels at Pearse Sutton's property is relatively low often in the range of 47 to 50dB L_{night}. The proposed Relevant Action application will see an increase in night noise at the property. In the year 2025 the L_{night} noise levels with the proposed development in place will result in noise levels increasing to be of the order of 60 to 64dB L_{night}.

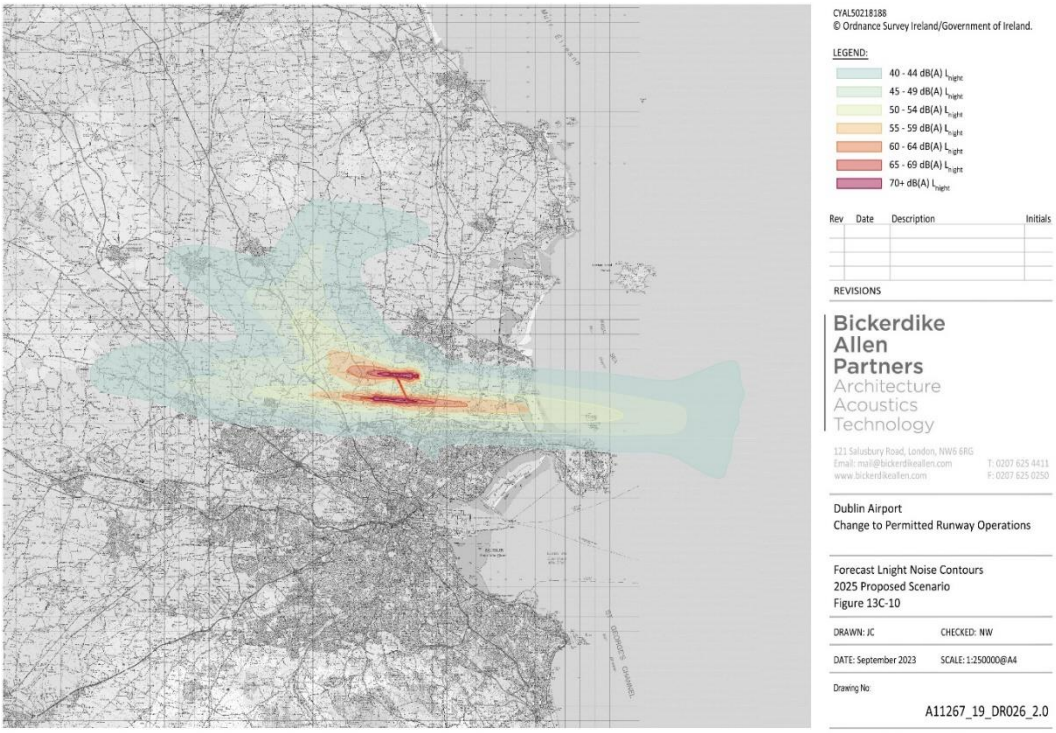


Figure 7: DAA predicted L_{night} airport noise contours for 2025.

To establish the aircraft noise impact of the North Runway, Tables 13-2 and 13-3 (shown below in Figure 8 and Figure 9) of the *Dublin Airport North Runway EIAR Volume 2 – Main Report* can be used to determine both the absolute noise level and the change in noise level due to the North Runway operations.

Based on the predicted L_{night} noise at the residence with the proposed development in place, as outlined in this section, an air noise impact scale description of "Very High" is appropriate for L_{night}. Pairing this with a change in the noise level of greater than 9dB due to North Runway operations to give a relative noise impact scale of "Very High" the magnitude of the effect of the North Runway can be described as "Profound" as per Table 13-4 of the *Dublin Airport North Runway EIAR Volume 2 – Main Report.*

Given the discrepancy between daytime noise levels measured versus contours predicted by DAA it is likely that the L_{night} noise impact here is being underestimated.

Table 13-2: Air Noise Impact Criteria (absolute) – residential

Scale Description	Annual dB Lden	Annual dB Lnight
Negligible	<45	<40
Very Low	45 – 49.9	40 – 44.9
Low	50 – 54.9	45 – 49.9
Medium	55 – 64.9	50 – 54.9
High	65 – 69.9	55 – 59.9
Very High	≥70	≥60

Figure 8: Dublin Airport North Runway EIAR Volume 2 – Main Report Table 13-2: Air Noise Impact Criteria (absolute).

Table 13-3: Air Noise Impact Criteria (relative)

Scale Description	Change in noise level, dB(A)
Negligible	0 – 0.9
Very Low	1 – 1-9
Low	2 – 2.9
Medium	3 – 5.9
High	6 – 8.9
Very High	≥9

Figure 9: Dublin Airport North Runway EIAR Volume 2 – Main Report Table 13-3: Air Noise Impact Criteria (relative).

3.3 Calculation of $L_{Aeq,16hr}$ Noise Levels from SEL Measurements

Based on the SEL measurements undertaken at the residence in combination with the information submitted by DAA to ANCA as part of the response to ANCA's review of the 2022 airport noise emission outlining the number of flights per aircraft type (included in Appendix B) the $L_{Aeq,16hr}$ noise levels at the residence can be calculated to be compared with the unattended measurement results to confirm validity. The noise level for each aircraft type can be calculated using the following formula and then logarithmically added to predict the daily $L_{Aeq,16hour}$ level as follows:

$$LAeq = L_{AX} - 10*\log_{10}(d1/d2) + 10*\log_{10}(N) - 10*\log_{10}(T)$$

Where:

L_{Ax} measured SEL
N number of vehicle movements
T time (seconds)
d1 distance from the source to the receiver
d2 distance from the source to the measurement

A correction was then applied to the results to account for days of Easterly winds which totalled 12 days over the 92-day duration. Based on the above calculation and the recorded SEL for each aircraft type outlined in Table 2 the predicted $L_{Aeq,16hour}$ during the 92-day summer period in 2023 is 67dB(A).

This shows good agreement with the typical $L_{Aeq,16hour}$ measured over the full 92-day period of 68dB(A). Both the predicted $L_{Aeq,16hour}$ calculated from the attended measurements and the measured $L_{Aeq,16hour}$ exceed the DAA predicted 92-day contour map level at the residence which predicted that Pearse Sutton's residence was on the 63 dBA $L_{Aeq,16hour}$ contour for aircraft noise exposure.

3.4 Comparison of SEL Noise Levels

Sound exposure level (SEL) contours have been predicted by the DAA and their acoustic consultants Bickerdike Allen in relation to the noise abatement departure procedures (NADP) for the North Runway for the most common aircraft types:

- Boeing 737-800
- Airbus A320
- Airbus A330

The predicted SEL contours are shown for the above-referenced plane types in Figure 10, Figure 11 and Figure 12 below, respectively.

For the DAA predicted SEL contours for the Boeing 737-800, as shown in Figure 10 below, Pearse Sutton's residence currently lies outside the 90dB(A) contour. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level ranged from 84 – 93 dB(A) for the Boeing 737-8AS with a logarithmical average SEL of 91dB(A) and 84 – 90 dB(A) for the Boeing 737-8200. This highlights a exceedance of the predicted SEL noise levels for the Boeing 8AS.

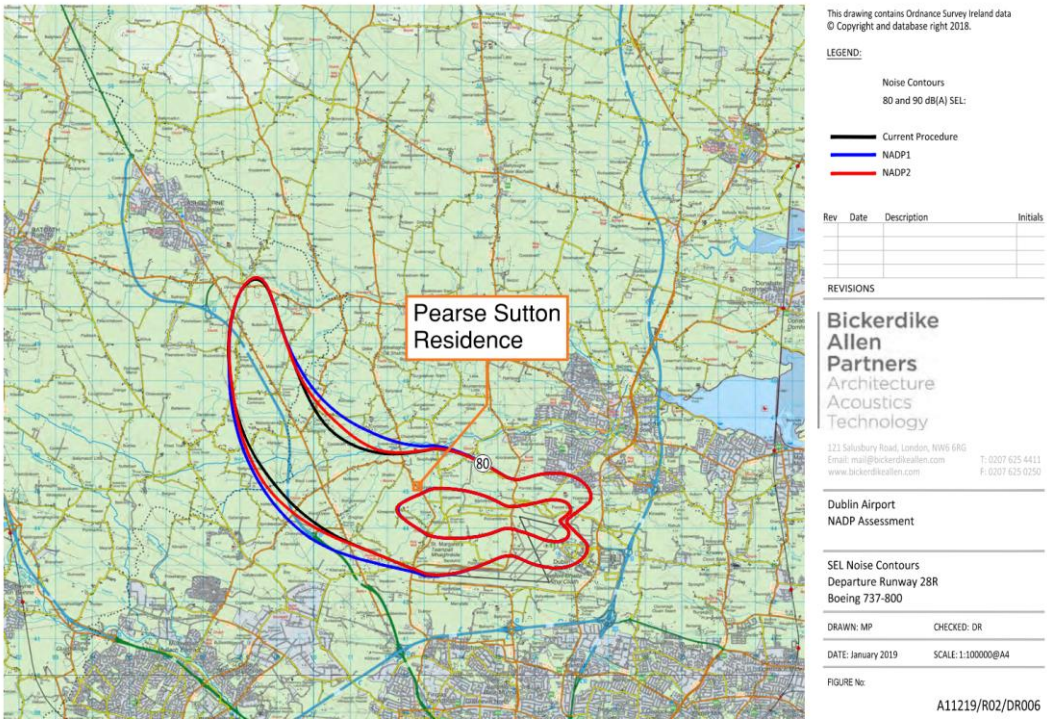


Figure 10: Predicted Sound Exposure Level noise contours for Airbus A320 for North Runway operation.

For the DAA predicted SEL contours for the Airbus A320, as shown in Figure 11 below, Pearse Sutton's residence currently inside the 80dB(A) contour for all departure procedures. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level ranged from 86 – 93 dB(A) for the Airbus A320 with a logarithmical average SEL of 92dB(A). This highlights a significant exceedance of the predicted SEL noise levels approximately 7dB(A).

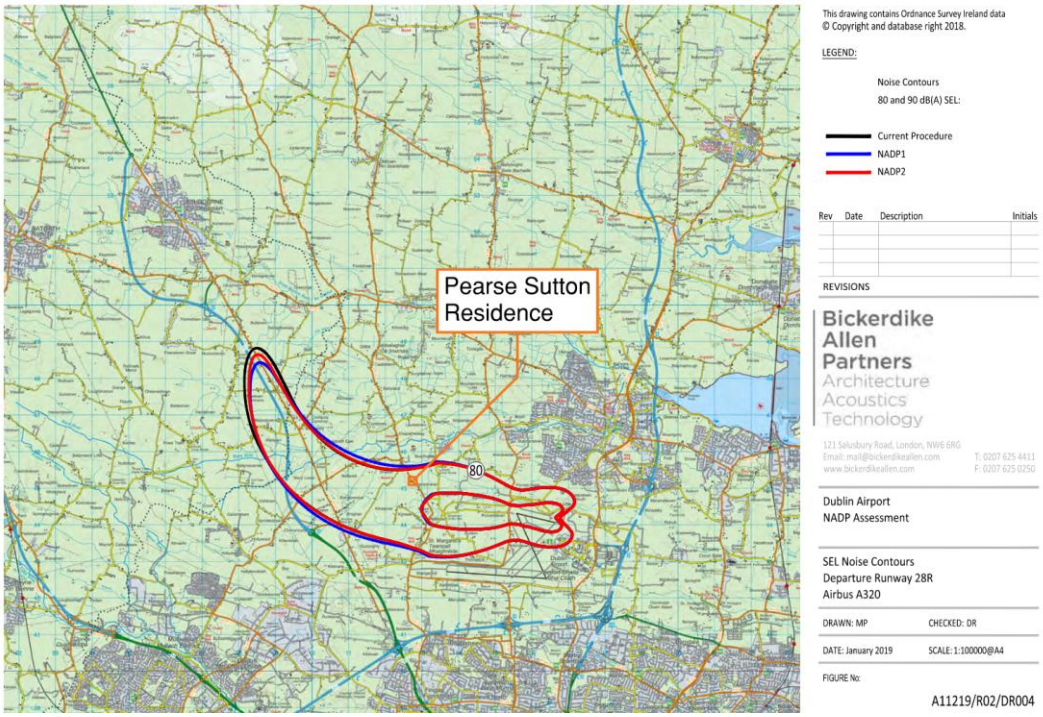


Figure 11: Predicted Sound Exposure Level airport noise contours with North Runway in operation.

For the DAA predicted SEL contours for the Airbus A330, as shown in Figure 12 below, Pearse Sutton's residence currently lies just outside the 90dB(A) contour for all departure procedures. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level ranged from 93 – 99 dB(A) for the Airbus A320 with a logarithmical average SEL of 97dB(A). This highlights a significant exceedance of the predicted SEL noise levels by 7dB(A).

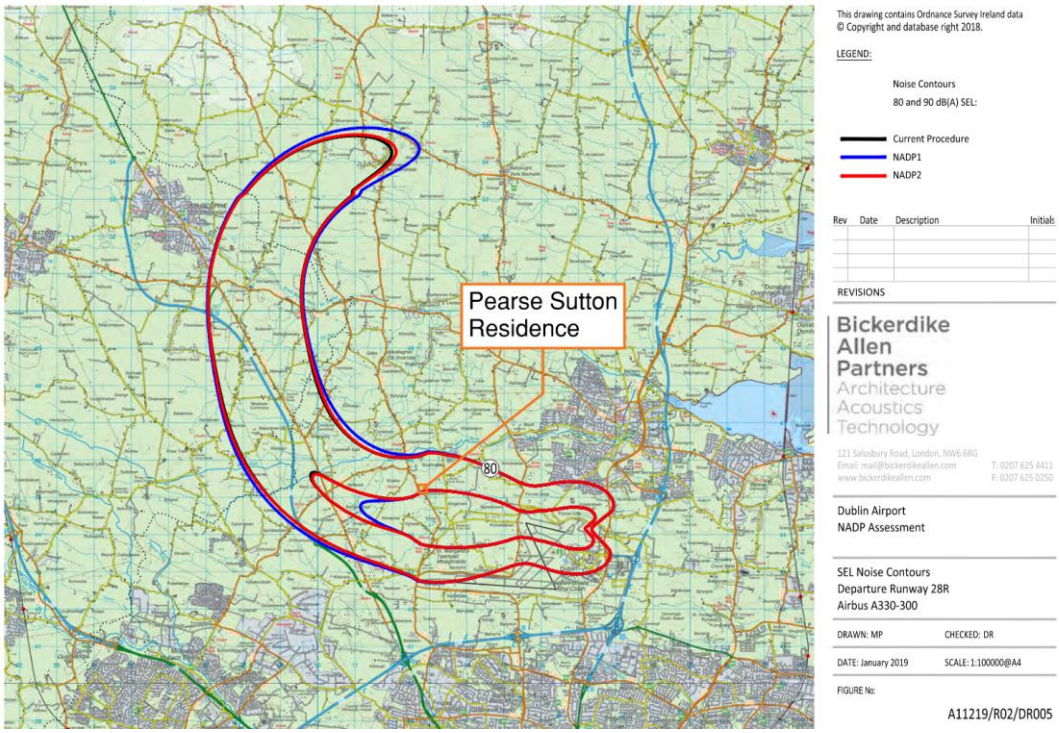


Figure 12: Predicted Sound Exposure Level airport noise contours with North Runway in operation.

3.5 L_{Amax} Noise Levels

Based on the unattended measurement results, the $L_{ASmax,1min}$ measurement data has been correlated to the aircraft type for each take-off over the monitoring period. This section outlines a comparison of the DAA predicted L_{Amax} noise levels with the measured L_{ASmax} noise levels recorded at the Breffni Conaty residence for the four most common aircraft types.

- Boeing 737-800
- Boeing 737max
- Airbus A320
- Airbus A330

Boeing 737

Figure 13 below outlines the number of L_{ASmax} occurrences for Boeing 737 aircraft over the full 92-day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Boeing 737-800 are shown further below in Figure 14 which places Pearse Sutton's residence outside the 80dB contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels shows an increase at the residence due to aircraft take-offs. The modal L_{ASmax} value recorded at the residence for Boeing 737 aircraft was 83dB, with 712 occurrences. This is an increase over the DAA predicted maximum noise levels by more than 3dB.

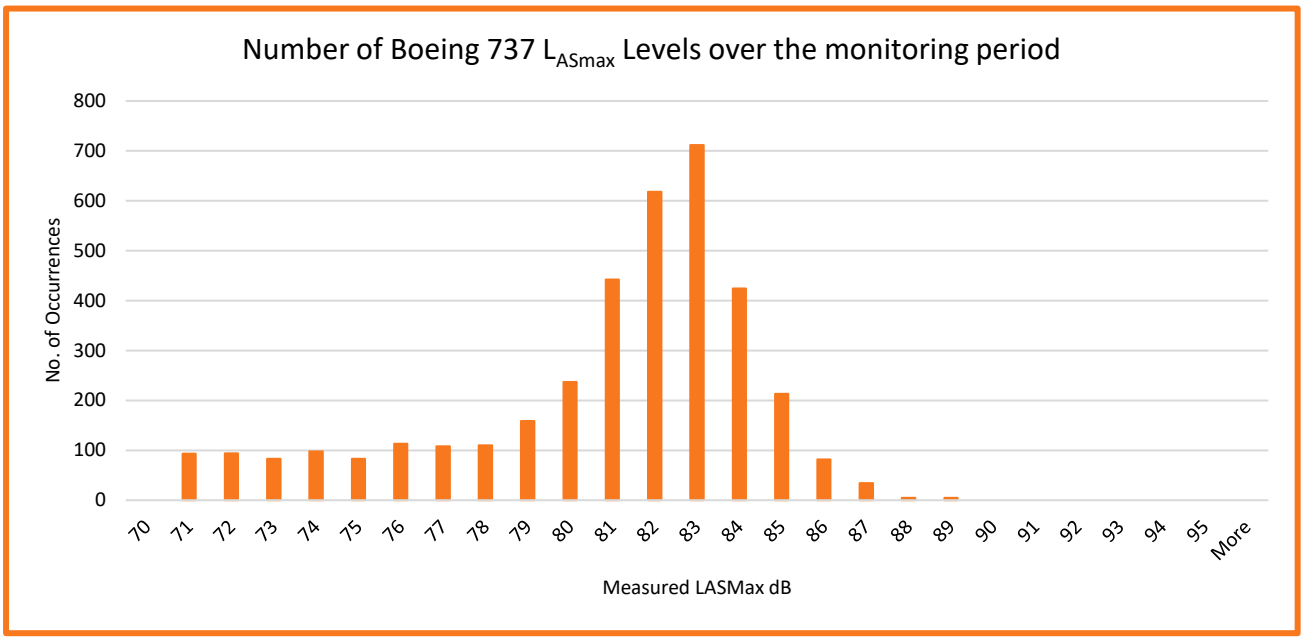


Figure 13: Number of Boeing 737 $L_{ASmax,1min}$ noise levels over the monitoring period.

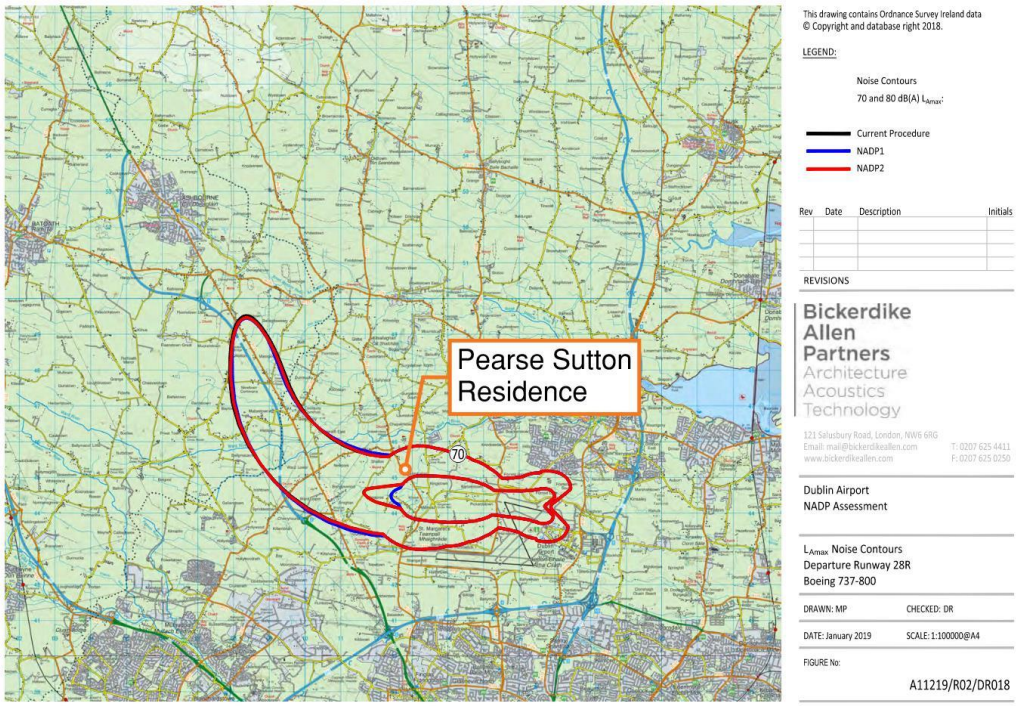


Figure 14: DAA predicted LAmax noise contours for Boeing 737-800.

In addition, the recorded L_{ASmax} noise levels for the Boeing 737-max aircraft have been plotted as shown in Figure 15 below which shows a modal L_{ASmax} of 77dB with 278 occurrences.

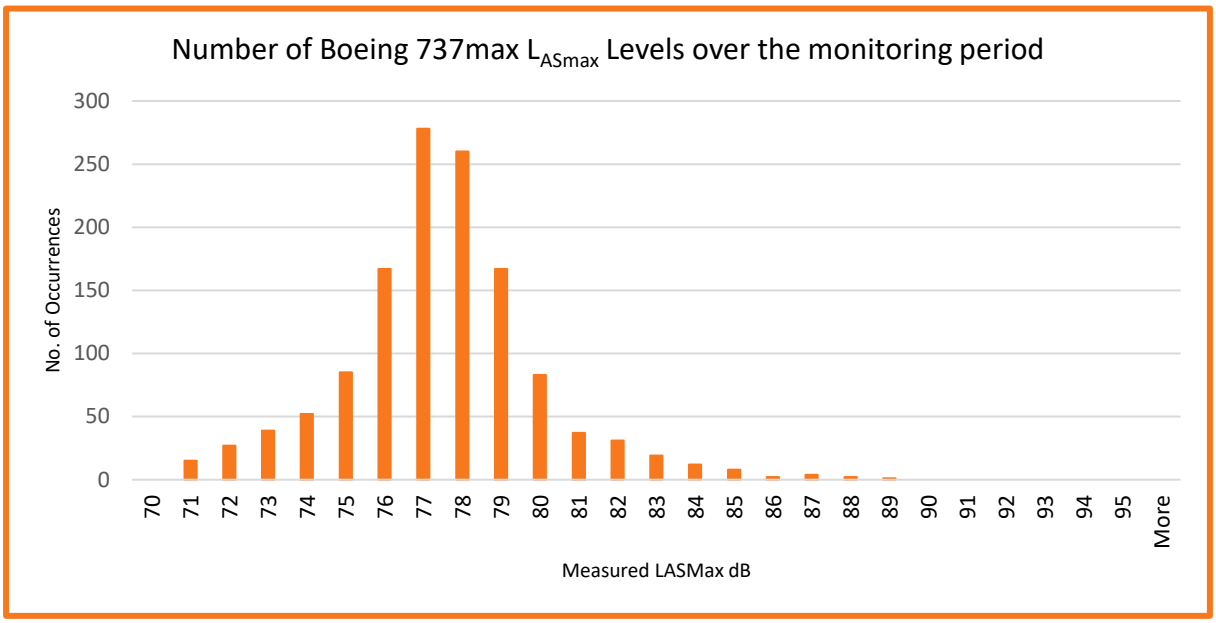


Figure 15: Number of Boeing 737-max $L_{ASmax,1min}$ noise levels over the monitoring period

Airbus A320

Figure 16 below outlines the number of L_{ASmax} occurrences for Airbus A320 aircraft over the full 92-day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Airbus A320 are shown further below in Figure 17 which places Pearse Sutton's residence between the 70dB(A) and 80dB(A) contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels show a significant exceedance at the residence due to aircraft take-offs. The modal L_{ASmax} value recorded at the residence for Airbus A320 aircraft was 83dB, with 646 occurrences. This is an exceedance of the DAA predicted maximum noise levels by approximately 8dB.

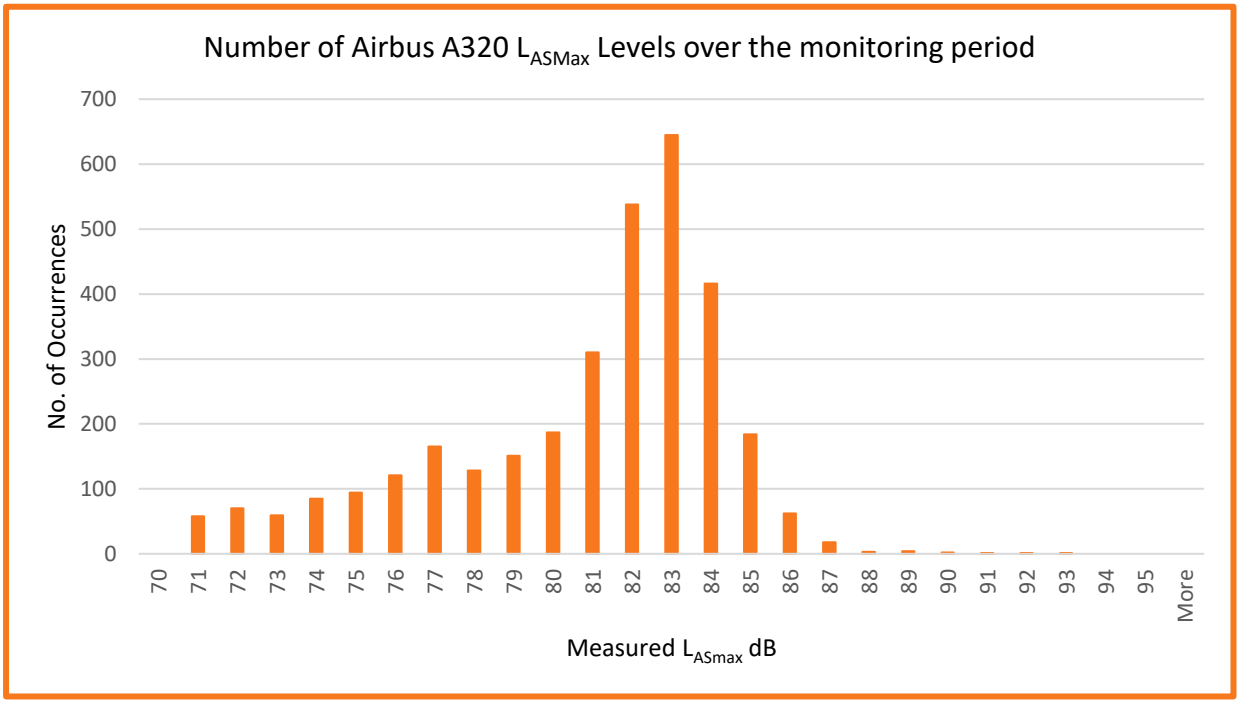


Figure 16: Number of Airbus A320 $L_{ASmax,1min}$ noise levels over the monitoring period

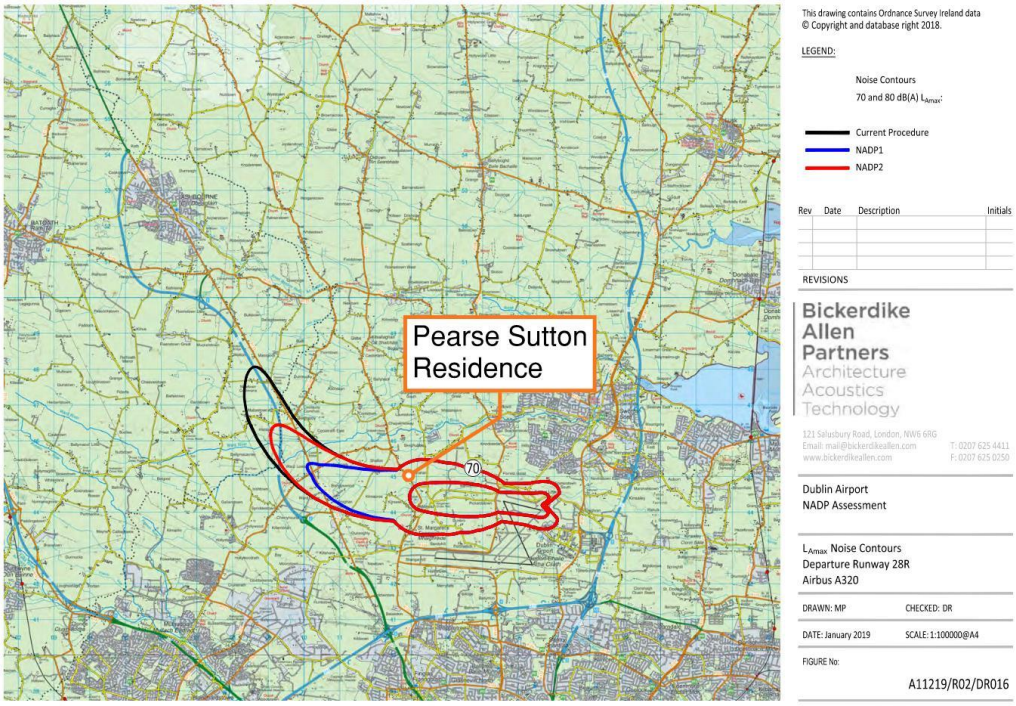


Figure 17: DAA predicted LAmax noise contours for Airbus A320

Airbus A330

Figure 18 below outlines the number of L_{ASmax} occurrences for Airbus A330 aircraft over the full 92-day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Airbus A330 are shown further below in Figure 19 which place Pearse Sutton's residence between the 70dB(A) and 80dB(A) contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels show a significant exceedance at the residence due to aircraft take-offs. The modal L_{ASmax} value recorded at the residence for Airbus A330 aircraft was 88dB, with 74 occurrences. This is an exceedance of the DAA predicted maximum noise levels by a minimum of 8dB, in addition to many recorded levels higher than 88dB.

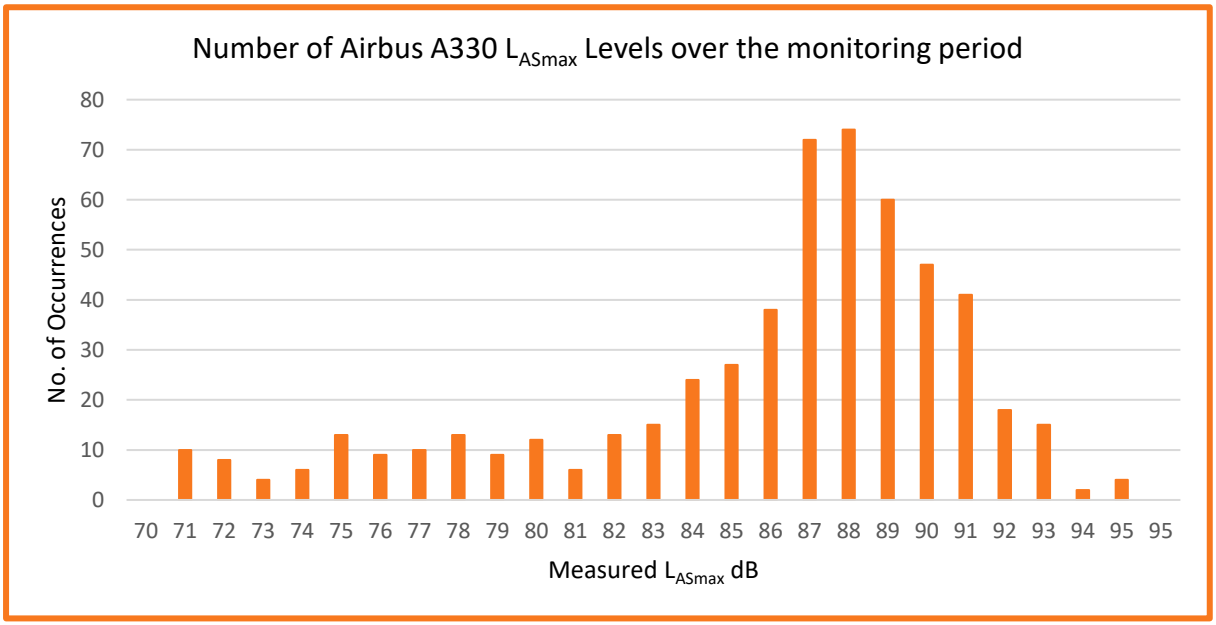


Figure 18: Number of Airbus A330 $L_{ASmax,1min}$ noise levels over the monitoring period

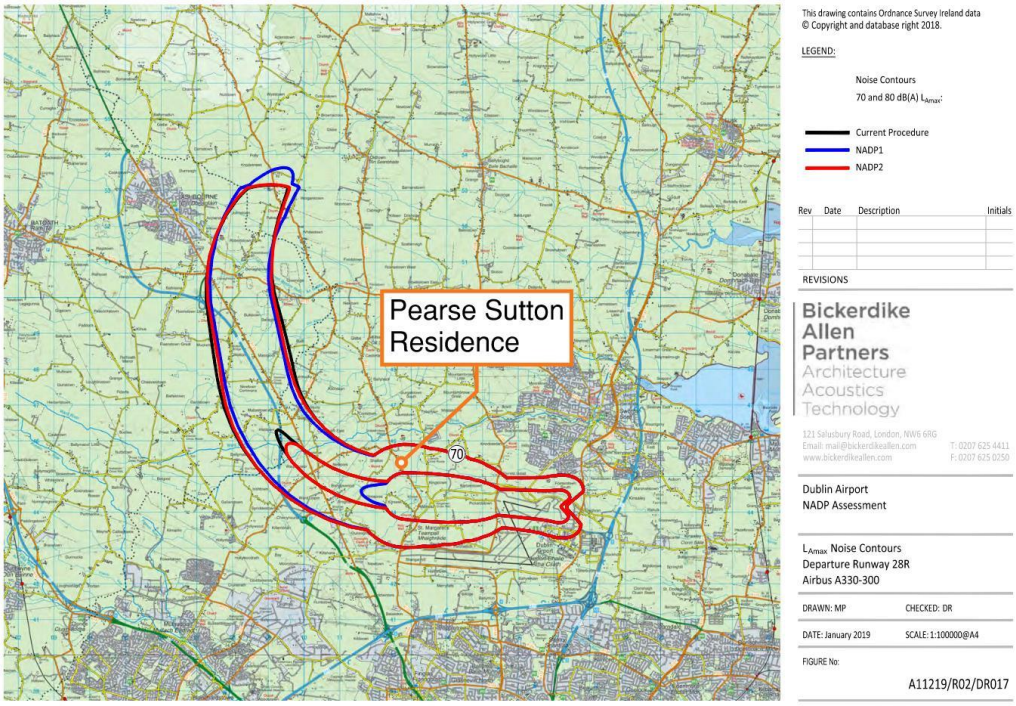


Figure 19: DAA predicted LAmax noise contours for Airbus A330

3.6 External Amenity Spaces

To consider the noise impact of aircraft noise on the residence, the recorded noise levels have been compared to the industry criteria for the external amenity spaces. ProPG 2017 and BS8233:2014 provide the following guidance in relation to external amenity spaces which state that:

> "*the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$".*

Based on the noise monitoring results where the prevailing wind was easterly and therefore aircraft were taking off to the east from the South Runway, it can be determined that the $L_{Aeq,16hour}$ noise levels at the residence were typically in the range of 55 – 58dB(A), slightly above the ProPG 2017 and BS8233 criteria for external amenity noise levels.

As outlined in Section 3.1, the average daytime noise levels at the residence rose to 68dB(A) when averaged over the full 92-day period and had a modal value of 70dB(A). This is an increase of approximately 10-13dB due to North Runway operations and is an exceedance of the industry criteria for external amenity noise levels based on the measured noise levels without aircraft.

4 Conclusion

Following the commencement of operations of the new Dublin Airport North Runway, Wave Dynamics were engaged by Pearse Sutton to review the 92-day unattended noise monitoring results and undertake sound exposure level measurements at Ballystrahan, Saint Margarets, Dublin, K67 KN88.

The objective of the assessment was to quantify the existing noise environment and the current noise levels from aircraft noise following the commencement of the operation of the North Runway. The measured noise levels have been compared with the predicted noise levels from the DAA noise contours and industry criteria.

Based on the results of the unattended noise monitoring at the residence, a 92-day average $L_{Aeq,16hour}$ of 68 dB(A) was recorded which shows an exceedance of the DAA predicted contour maps which show Pearse Sutton's residence to be on the 66dB(A) contour as per the same 92-day period.

Sound exposure level measurements have also been taken at the residence and thus used to calculate the 92-day average $L_{Aeq,16hour}$ based on the number of aircraft types over the 92-day period which predicted an $L_{Aeq,16hour}$ of 67 dB(A).

Both the predicted $L_{Aeq,16hour}$ calculated from the attended measurements and the measured $L_{Aeq,16hour}$ exceed the DAA predicted 92-day contour map level at the residence which predicts 63 dBA for aircraft noise exposure. In addition these have been compared to the DAA 2025 predicted noise contours which are 63-65dBA at the dwelling. The measurements undertaken in 2023 do not correlate with the most recent DAA noise contours this places doubts over the accuracy of the DAA contours when compared to actual measured data from the same period.

The DAA predicted L_{night} contours have been compared to the existing nighttime noise levels at the dwelling. Based on the *Dublin Airport North Runway EIAR Volume 2 – Main Report* it is likely that commencement of night time flights will have a "Profound" impact on the noise levels at the residence.

Sound exposure level measurements for the three most common aircraft types were also compared to the DAA predicted noise contours for the same aircraft types which showed exceedances for all three aircraft types of up to 7dB(A).

L_{ASmax} values over the full 92-day monitoring period for the three most common aircraft types were compared to the DAA-predicted noise contours for the same aircraft types. All three aircraft types showed exceedances over the predicted maximum noise levels with the worst case aircraft having a modal L_{ASmax} value of 8dBA in excess of the predicted noise levels.

Appendix A- Glossary of Terms

dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μPa).
dB(A)	An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'–weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Hertz	The unit of sound frequency in cycles per second.
L_{A90}	A-weighted, sound level just exceeded for 90% of the measurement period and calculated by statistical analysis. See also the background noise level.
L_{Aeq}	A-weighted, equivalent continuous sound level.
L_{AFmax}	A-weighted, maximum, sound level measured with a fast time-constant - maximum is not peak

Appendix B – Volume of Flights per Aircraft Type

The volume of flights per aircraft type have been submitted to DAA by ANCA and are outlined below in Table 3.

Table 3: Volume of each aircraft type over the entire year and over summer period

Aircraft Type	2023						
	Annual Average				Summers Period		
	Annual Day	Annual Eve	Annual Night	Annual 24hr	Summer Day 16hr	Summer Night	Summer 24hr
Airbus A300	0	0	0	0	0	0	0
Airbus A306	595	298	298	1190	262	87	350
Airbus A319	2083	0	0	2083	612	0	612
Airbus A320	38379	10115	4165	52659	14246	1224	15470
Airbus A320neo	3273	1488	298	5058	1398	87	1486
Airbus A321	1785	893	595	3273	787	175	961
Airbus A321neo	5355	0	595	5950	1573	175	1748
Airbus A330	8628	0	893	9520	2535	262	2797
Airbus A330neo	0	0	0	0	0	0	0
Airbus A350	0	0	0	0	0	0	0
ATR 42	0	0	0	0	0	0	0
ATR 72	9223	2083	0	11305	3321	0	3321
BAe 146/Avro RJ	0	0	0	0	0	0	0
Boeing 737-400	595	1190	595	2380	524	175	699
Boeing 737-500	0	0	0	0	0	0	0
Boeing 737-700	0	0	0	0	0	0	0
Boeing 737-800	38974	10710	4463	54147	14596	1311	15907
Boeing 737 MAX	17553	6545	2975	27073	7079	874	7953
Boeing 757	2380	298	298	2975	787	87	874
Boeing 767	1190	1190	595	2975	699	175	874
Boeing 777	1190	0	595	1785	350	175	524
Boeing 777X	0	0	0	0	0	0	0
Boeing 787	3570	0	595	4165	1049	175	1224
Bombardier CS300	1190	595	0	1785	524	0	524
Bombardier Dash 8	595	0	0	595	175	0	175
Convair 580	0	0	0	0	0	0	0
Embraer E190/195	4165	1785	298	6248	1748	87	1835
Embraer E190-E2	595	0	0	595	175	0	175
HS748A	0	0	0	0	0	0	0
Lockheed C130	0	0	0	0	0	0	0
McDonnell Douglas	0	0	0	0	0	0	0
MD83	0	0	0	0	0	0	0
Piper PA34	0	0	0	0	0	0	0
Shorts SD330/360	0	0	0	0	0	0	0

Aircraft Type	2023						
	Annual Average				Summers Period		
	Annual Day	Annual Eve	Annual Night	Annual 24hr	Summer Day 16hr	Summer Night	Summer 24hr
Other	1488	298	0	1785	524	0	524
Total	**142804**	**37486**	**17255**	**197546**	**52964**	**5069**	**58034**

Appendix C - Unattended Noise Monitoring Results

Table 4 below outlines the noise levels recorded at location L1 over the period 14th of June 2023 to 17th of September 2023. The results are averaged over the following periods:

- $L_{Aeq,16hour}$ 07:00 – 23:00
- $L_{Aeq,8hour}$ 23:00 – 07:00

Table 4: Unattended Measurement Results

Date	Start Time	End Time	Average $L_{Aeq,T}$
14/06/2023	07:00	23:00	55
14/06/2023	23:00	07:00	49
15/06/2023	07:00	23:00	57
15/06/2023	23:00	07:00	49
16/06/2023	07:00	23:00	59
16/06/2023	23:00	07:00	51
17/06/2023	07:00	23:00	59
17/06/2023	23:00	07:00	46
18/06/2023	07:00	23:00	58
18/06/2023	23:00	07:00	48
19/06/2023	07:00	23:00	67
19/06/2023	23:00	07:00	49
20/06/2023	07:00	23:00	63
20/06/2023	23:00	07:00	49
21/06/2023	07:00	23:00	67
21/06/2023	23:00	07:00	50
22/06/2023	07:00	23:00	58
22/06/2023	23:00	07:00	49
23/06/2023	07:00	23:00	68
23/06/2023	23:00	07:00	49
24/06/2023	07:00	23:00	67
24/06/2023	23:00	07:00	48
25/06/2023	07:00	23:00	68
25/06/2023	23:00	07:00	-
26/06/2023	07:00	23:00	-
26/06/2023	23:00	07:00	48
27/06/2023	07:00	23:00	68
27/06/2023	23:00	07:00	48
28/06/2023	07:00	23:00	68
28/06/2023	23:00	07:00	49
29/06/2023	07:00	23:00	68
29/06/2023	23:00	07:00	51
30/06/2023	07:00	23:00	68
30/06/2023	23:00	07:00	50
01/07/2023	07:00	23:00	68
01/07/2023	23:00	07:00	48
02/07/2023	07:00	23:00	68
02/07/2023	23:00	07:00	60
03/07/2023	07:00	23:00	68
03/07/2023	23:00	07:00	49
04/07/2023	07:00	23:00	70

Date	Start Time	End Time	Average $L_{Aeq,T}$
04/07/2023	23:00	07:00	49
05/07/2023	07:00	23:00	70
05/07/2023	23:00	07:00	49
06/07/2023	07:00	23:00	66
06/07/2023	23:00	07:00	50
07/07/2023	07:00	23:00	60
07/07/2023	23:00	07:00	51
08/07/2023	07:00	23:00	68
08/07/2023	23:00	07:00	49
09/07/2023	07:00	23:00	68
09/07/2023	23:00	07:00	47
10/07/2023	07:00	23:00	66
10/07/2023	23:00	07:00	59
11/07/2023	07:00	23:00	68
11/07/2023	23:00	07:00	56
12/07/2023	07:00	23:00	69
12/07/2023	23:00	07:00	48
13/07/2023	07:00	23:00	69
13/07/2023	23:00	07:00	48
14/07/2023	07:00	23:00	63
14/07/2023	23:00	07:00	50
15/07/2023	07:00	23:00	70
15/07/2023	23:00	07:00	51
16/07/2023	07:00	23:00	70
16/07/2023	23:00	07:00	48
17/07/2023	07:00	23:00	69
17/07/2023	23:00	07:00	49
18/07/2023	07:00	23:00	65
18/07/2023	23:00	07:00	48
19/07/2023	07:00	23:00	69
19/07/2023	23:00	07:00	53
20/07/2023	07:00	23:00	69
20/07/2023	23:00	07:00	54
21/07/2023	07:00	23:00	70
21/07/2023	23:00	07:00	50
22/07/2023	07:00	23:00	69
22/07/2023	23:00	07:00	48
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24/07/2023	23:00	07:00	48
25/07/2023	07:00	23:00	69
25/07/2023	23:00	07:00	48
26/07/2023	07:00	23:00	67
26/07/2023	23:00	07:00	49
27/07/2023	07:00	23:00	69
27/07/2023	23:00	07:00	49
28/07/2023	07:00	23:00	70
28/07/2023	23:00	07:00	49
29/07/2023	07:00	23:00	70
29/07/2023	23:00	07:00	49
30/07/2023	07:00	23:00	71

Date	Start Time	End Time	Average $L_{Aeq,T}$
30/07/2023	23:00	07:00	49
31/07/2023	07:00	23:00	70
31/07/2023	23:00	07:00	50
01/08/2023	07:00	23:00	68
01/08/2023	23:00	07:00	50
02/08/2023	07:00	23:00	67
02/08/2023	23:00	07:00	47
03/08/2023	07:00	23:00	69
03/08/2023	23:00	07:00	48
04/08/2023	07:00	23:00	69
04/08/2023	23:00	07:00	55
05/08/2023	07:00	23:00	68
05/08/2023	23:00	07:00	47
06/08/2023	07:00	23:00	69
06/08/2023	23:00	07:00	48
07/08/2023	07:00	23:00	69
07/08/2023	23:00	07:00	48
08/08/2023	07:00	23:00	69
08/08/2023	23:00	07:00	49
09/08/2023	07:00	23:00	69
09/08/2023	23:00	07:00	50
10/08/2023	07:00	23:00	57
10/08/2023	23:00	07:00	49
11/08/2023	07:00	23:00	70
11/08/2023	23:00	07:00	49
12/08/2023	07:00	23:00	70
12/08/2023	23:00	07:00	48
13/08/2023	07:00	23:00	70
13/08/2023	23:00	07:00	48
14/08/2023	07:00	23:00	69
14/08/2023	23:00	07:00	47
15/08/2023	07:00	23:00	69
15/08/2023	23:00	07:00	50
16/08/2023	07:00	23:00	65
16/08/2023	23:00	07:00	48
17/08/2023	07:00	23:00	58
17/08/2023	23:00	07:00	50
18/08/2023	07:00	23:00	58
18/08/2023	23:00	07:00	-
19/08/2023	07:00	23:00	70
19/08/2023	23:00	07:00	57
20/08/2023	07:00	23:00	70
20/08/2023	23:00	07:00	49
21/08/2023	07:00	23:00	70
21/08/2023	23:00	07:00	50
22/08/2023	07:00	23:00	70
22/08/2023	23:00	07:00	47
23/08/2023	07:00	23:00	70
23/08/2023	23:00	07:00	47
24/08/2023	07:00	23:00	70
24/08/2023	23:00	07:00	48
25/08/2023	07:00	23:00	71

Date	Start Time	End Time	Average $L_{Aeq,T}$
25/08/2023	23:00	07:00	47
26/08/2023	07:00	23:00	69
26/08/2023	23:00	07:00	46
27/08/2023	07:00	23:00	70
27/08/2023	23:00	07:00	47
28/08/2023	07:00	23:00	69
28/08/2023	23:00	07:00	48
29/08/2023	07:00	23:00	71
29/08/2023	23:00	07:00	48
30/08/2023	07:00	23:00	70
30/08/2023	23:00	07:00	47
31/08/2023	07:00	23:00	68
31/08/2023	23:00	07:00	46
01/09/2023	07:00	23:00	69
01/09/2023	23:00	07:00	47
02/09/2023	07:00	23:00	68
02/09/2023	23:00	07:00	46
03/09/2023	07:00	23:00	69
03/09/2023	23:00	07:00	48
04/09/2023	07:00	23:00	67
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05/09/2023	23:00	07:00	54
06/09/2023	07:00	23:00	67
06/09/2023	23:00	07:00	55
07/09/2023	07:00	23:00	65
07/09/2023	23:00	07:00	54
08/09/2023	07:00	23:00	70
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10/09/2023	07:00	23:00	68
10/09/2023	23:00	07:00	47
11/09/2023	07:00	23:00	66
11/09/2023	23:00	07:00	46
12/09/2023	07:00	23:00	70
12/09/2023	23:00	07:00	49
13/09/2023	07:00	23:00	70
13/09/2023	23:00	07:00	49
14/09/2023	07:00	23:00	70
14/09/2023	23:00	07:00	48
15/09/2023	07:00	23:00	70
15/09/2023	23:00	07:00	47
16/09/2023	07:00	23:00	69
16/09/2023	23:00	07:00	48
17/09/2023	07:00	23:00	68

Technical Note

Project:	Newpark, The Ward, Dublin	**Title:**	Noise Assessment
Job Number:	WDA230104	**Prepared By:**	Sean Rocks
Date:	08/12/2023	**Reviewed By:**	James Cousins
Reference:	WDA230104TN_1_A_02	**Client:**	Teresa Sweeney

1 Introduction

Following the commencement of operations of the new Dublin Airport North Runway, Wave Dynamics were engaged by Teresa Sweeney to assess the noise levels from aircraft flyovers using long term (92 Day) noise monitoring at Newpark, The Ward, Dublin, D11 EF2R.

The objective of the assessment was to quantify the existing noise environment and the current noise levels from aircraft noise from the operation of the new North Runway at Dublin Airport. The measured noise levels have been compared with the predicted noise levels from the DAA noise contours and industry criteria.

1.1 Statement of Competence

This assessment and report were completed by Wil Oshoke, Principal Consultant with Wave Dynamics, who has extensive experience assessing noise impact. His qualifications include a PhD in Acoustics (Dublin City University – School of Electronic Engineering). Wil is a member of Engineers Ireland (MIEI), a Corporate member of the Institute of Acoustics (MIOA), and a Chartered Engineer (CEng) with the UK Engineering Council Via the Institute of Acoustics.

The assessment and report were peer-reviewed by Sean Rocks, Director | Senior Consultant; Sean has experience with aircraft noise, particularly for planning and complaints investigation. Sean's qualifications include a BEng (Hons) in Mechanical and Manufacturing Engineering, a Diploma in Acoustics and Noise Control (Institute of Acoustics), an IOA Certificate of Competence in Environmental Noise Measurement and SITRI certified sound insulation tester. Sean is a member of both Engineers Ireland and the Institute of Acoustics.

This project was led by James Cousins, Managing Director | Principal Consultant with Wave Dynamics who has extensive experience in assessing noise and vibration from road and rail infrastructure on commercial and residential developments. James is an experienced consultant. His qualifications include; BSc (Hons) in Construction Management and Engineering, Pg Cert in Construction Law and Diploma in Acoustics and Noise Control (Institute of Acoustics) and an IOA Competence Cert in Building Acoustic Measurements. James is a member of both Engineers Ireland (MIEI) and the Institute of Acoustics (MIOA) and is the current SITRI Chairman.

2 Baseline Noise Survey

Attended and unattended noise surveys were undertaken to quantify the noise levels from aircraft flyovers at the residence of Teresa Sweeney D11 EF2R. The attended noise measurements were conducted from 08:45hrs to 10:35hrs on 13th of September 2023 and from 12:00hrs to 14:00hrs on 19th October 2023. The unattended noise measurements were taken continuously from 00:00hrs on 14th of June 2023 to 20:00hrs on 17/09/2023. Sound exposure level measurements were also taken for aircraft flyovers during the attended noise survey.

2.1 Site Description and Measurement Locations

The site is on the R121 in Newpark, The Ward, Dublin as shown in Figure 1 below. The area is mainly agricultural, with sporadic residential dwellings and commercial properties. Dublin Airport is located to the residence's southeast, approximately 3 km from the edge of the new North Runway.

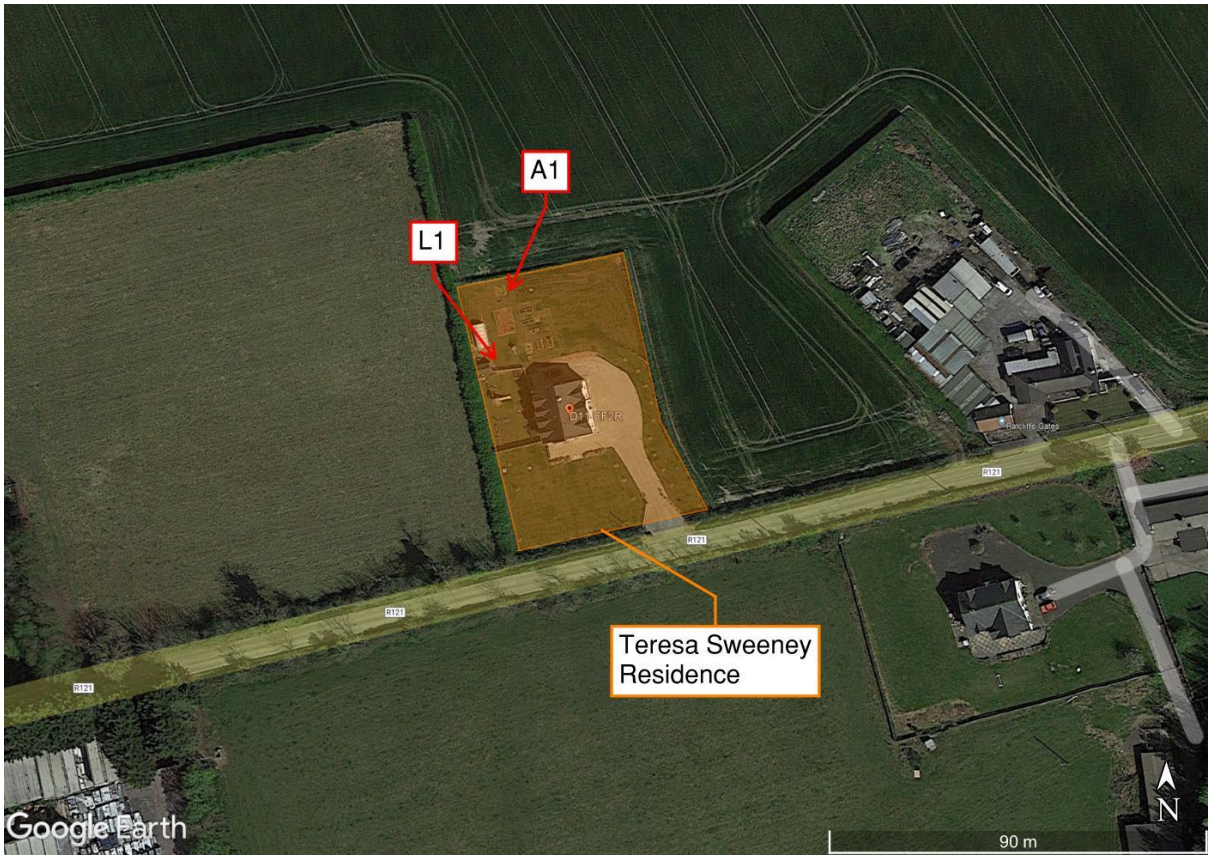


Figure 1: Site location and monitoring location L1 and SEL measurement location A1.



Figure 2: Site location in Relation to Dublin Airport and the new North Runway.

Unattended Noise Measurements

The unattended noise logger was deployed in location L1, as per Figure 1, to the rear garden of the residence. The logger was calibrated before and after the measurements, and no significant drift was noted. The logger was deployed at a height of approximately 4 m above the ground.

On review of the measurement data by WDA, days of unsuitable weather conditions had negligible effect on the daily $L_{Aeq,16hour}$ values and $L_{ASmax,1min}$ measurements. One night (night starting 18th of August) was affected by extraneous noise which has been filtered.


Figure 3: Noise Logger Setup

2.1.1 Survey Period

Based on the data review, the measurements commenced at 00:00hrs on Wednesday, the 14th of June 2023 and finished at 20:00hrs on Sunday, the 17th of September 2023. The measurement duration was set to 1-minute intervals. It is understood that the North Runway was operational throughout the measurement period, initially between 09:00hrs and 20:00hrs until 4 July 2023, after which the operating hours of the North Runway were expanded to 07:00hrs to 23:00hrs.

The measurement period was set in line with Dublin Airport's busiest 92 day period, 16th of June to 15th September, around which the DAA contour maps are developed. Many of the Dublin Airport planning conditions have been set based on the predictions of noise levels over this 92-day period such as the home insulation scheme. Therefore the unattended noise monitoring undertaken allows for direct comparison of the measured noise levels to the DAA noise contour maps.

2.1.2 Noise Measurement Equipment

A Class 1 sound level meter/noise logger, in general accordance with IEC 61672-1:2013, was used for the attended measurements. Table 1 below summarises the measurement equipment used.

Table 1: Noise Measurement Equipment

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Sound Level Meter	SLM4	NTI XL2-TA	A2A-23316-E1	UK-23-100	01/09/2025
Calibrator	CAL1	Nor 1251	31056	AC230226	16/10/2024
Noise Monitor	-	EM2030-AO	01593	2201593	24/06/2024
Calibrator	Cal 2	Cirrus	99866	183284	16/11/2023
Sound Level Meter	SLM1	Nor 140	1405554	U38505/U38506/U38507/U44953	27/07/2025
Calibrator	CAL3	Nor 1251	32096	U44813	10/07/2024

2.1.3 Subjective Noise Environment

Based on the information provided during the attended noise survey and logger deployment, the following noise sources were identified:

- Aircraft Noise from Aircraft Fly Overs.
- Road noise from the R121
- Birdsong
- Occasional activity from residents (cars arriving/departing, voices, etc.)

2.2 Noise Measurement Results

This section outlines the results of the attended noise survey.

Unattended Monitoring Results

Table 4 in Appendix C of this report outlines the results of the noise levels recorded at the noise monitoring location L1 over the full monitoring period averaged over the following periods:

- $L_{Aeq,16hour}$ 07:00 – 23:00
- $L_{Aeq,8hour}$ 23:00 – 07:00

Figure 4 below highlights each of the daytime $L_{Aeq,16hour}$ values and number of times they occurs over the full 92 day monitoring period. The graph indicates a significant median value of 66dBA with a total of 41 occurrences. This is 30 more occurrences than the next highest value at 65dBA (11 occurrences).

Based on the daily $L_{Aeq,16hour}$ measurements undertaken at the Teresa Sweeney residence as shown in Figure 4, the logarithmically averaged $L_{Aeq,16hour}$ for the full 92 day period is 65dBA.

A full breakdown of all the unattended measurement results is available on request.

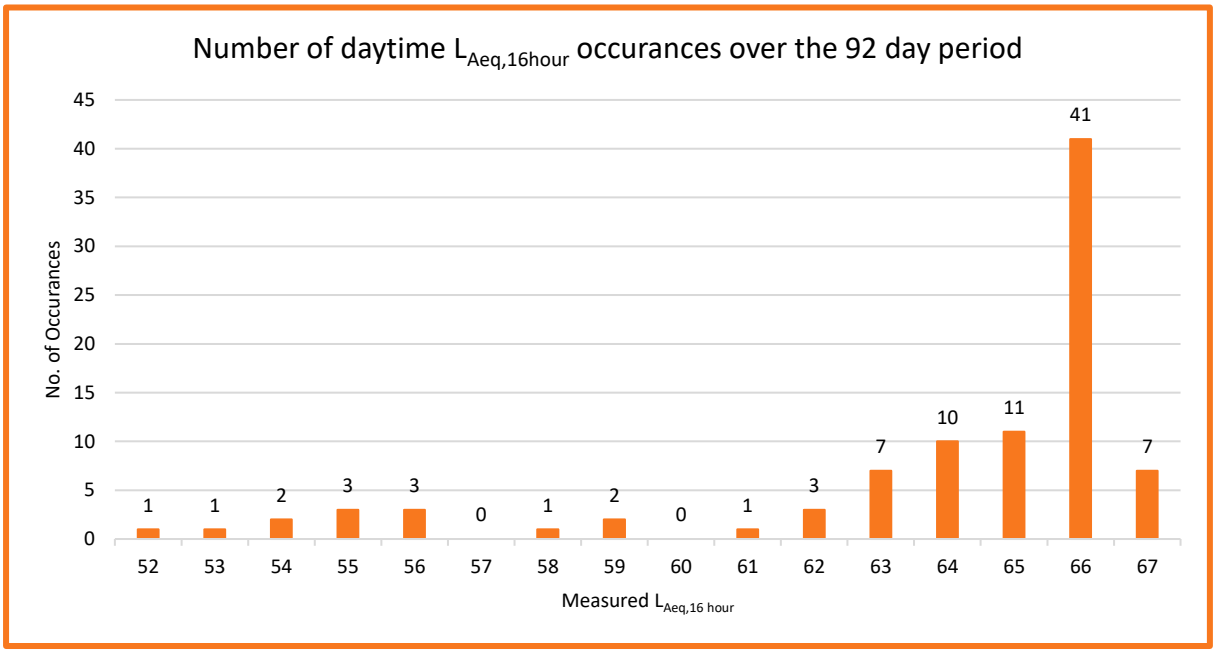


Figure 4: Number of daytime $L_{Aeq,16hour}$ occurrences over the full monitoring period

L_{night} values ranged from 43 to 54 dB with an average of 48dB L_{night}. An L_{den} level was also calculated for the 92 day period and was 65 dB L_{den}.

Attended Monitoring Results

Table 2 outlines the results of the attended measurements for aircraft flyover noise levels at location A1. The flyover sound exposure levels have been calculated from the measured L_{Aeq} levels.

The sound exposure level (SEL) from aircraft flyovers has been calculated using the following equation to allow direct comparison of the measured levels with the DAA predicted SEL contour maps:

$$L_{AX} = LAeq + 10*\log_{10}(d1/d2) - 10*\log_{10}(N) + 10*\log_{10}(T)$$

Where:

L_{Ax} measured SEL
N number of vehicle movements
T time (seconds)
d1 distance from the source to the receiver
d2 distance from the source to the measurement

Table 2: Aircraft Flyover Noise Levels

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level
Location	Date	Time (hrs)	Duration (sec)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
A1	13/09/2023	08:45	43	Boeing 787-8	72	80	88
A1	13/09/2023	08:47	38	Boeing 737-8AS	74	80	90
A1	13/09/2023	08:49	36	Boeing 737-8AS	75	81	91
A1	13/09/2023	08:50	41	Boeing 737-8AS	74	81	90
A1	13/09/2023	09:00	29	Airbus A320-214	74	79	89
A1	13/09/2023	09:04	33	Airbus A320	66	73	81
A1	13/09/2023	09:08	32	Embraer EI80STD	73	80	88
A1	13/09/2023	09:10	44	Boeing 737-8AS	73	80	89
A1	13/09/2023	09:12	39	Embraer E190SR	72	79	88
A1	13/09/2023	09:15	41	Boeing 737-8AS	74	81	90
A1	13/09/2023	09:16	48	Boeing 737-8AS	72	81	89
A1	13/09/2023	09:18	41	Boeing 737 Max 8.200	69	79	85
A1	13/09/2023	09:20	39	Embraer EI80STD	72	82	88
A1	13/09/2023	09:24	39	ATR 72-600	64	71	80
A1	13/09/2023	09:33	46	Boeing 787-8 Dreamliner	70	78	87
A1	13/09/2023	09:37	53	Boeing 737-8AS	76	84	93
A1	13/09/2023	09:40	40	Embraer Practor 600	66	72	82
A1	13/09/2023	09:42	42	Boeing 737-8AS	72	80	88
A1	13/09/2023	09:47	52	Boeing 787-9 Dreamliner	68	76	85
A1	13/09/2023	09:50	36	Airbus A320-214	72	78	88
A1	13/09/2023	09:51	34	Boeing 737 Max 8.200	71	78	86
A1	13/09/2023	10:01	39	Boeing 737 Max 8.200	69	77	85
A1	13/09/2023	10:03	43	Airbus A321-251NX	67	75	83
A1	13/09/2023	10:10	40	Airbus A320-291N	64	70	80
A1	13/09/2023	10:12	36	Boeing 737-8AS	74	80	90
A1	13/09/2023	10:13	44	Boeing 737-8AS	74	83	90
A1	13/09/2023	10:17	42	Boeing 737-8AS	74	81	90

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level
Location	Date	Time (hrs)	Duration (sec)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
A1	13/09/2023	10:22	37	ATR 72-600	66	73	82
A1	13/09/2023	10:24	39	Airbus A321-211CP2F7	69	75	85
A1	13/09/2023	10:28	41	Boeing 787-8 Dreamliner	71	79	87
A1	13/09/2023	10:32	42	Airbus A320-214	70	77	86
A1	13/09/2023	10:34	38	Boeing 787-8 Dreamliner	71	80	87
A1	19/10/2023	12:13	41	Airbus A330	79	88	95
A1	19/10/2023	13:08	45	Airbus A330-302	78	87	95
A1	19/10/2023	13:34	44	Airbus A330-202	79	89	95

1. SELs calculated on the rounded L_{Aeq} values measured.

3 Analysis of Results

3.1 $L_{Aeq,16hr}$ Noise Levels

The most recently predicted noise contours for the North Runway operation as per the 2007 planning permission are the compliance contours submitted to Fingal County Council in 2016. Here, the predicted $L_{Aeq,16hour}$ (07:00hrs to 23:00 hrs) noise contours for Dublin Airport with the North Runway operational can be seen in Figure 5. The noise contours are developed by DAA based on the busiest 92 day period of the year for the airport, 16th June to 15th September.

Based on the DAA contour maps, Teresa Sweeney's residence is outside the lowest predicted contour therefore noise from aircraft flyovers would be expected to be below 60 dB $L_{Aeq,16hour}$. From the results of the unattended noise monitoring outlined in Table 4 (see Appendix C), the corresponding $L_{Aeq,16hour}$ averaged over the same 92 day period as the DAA contour maps are developed is 65dB with a median value of 66dB. This demonstrates that the measured levels at the residence exceed the predicted levels by a minimum of 5dB when compared to the 92 day monitoring period of which the contours are based on.

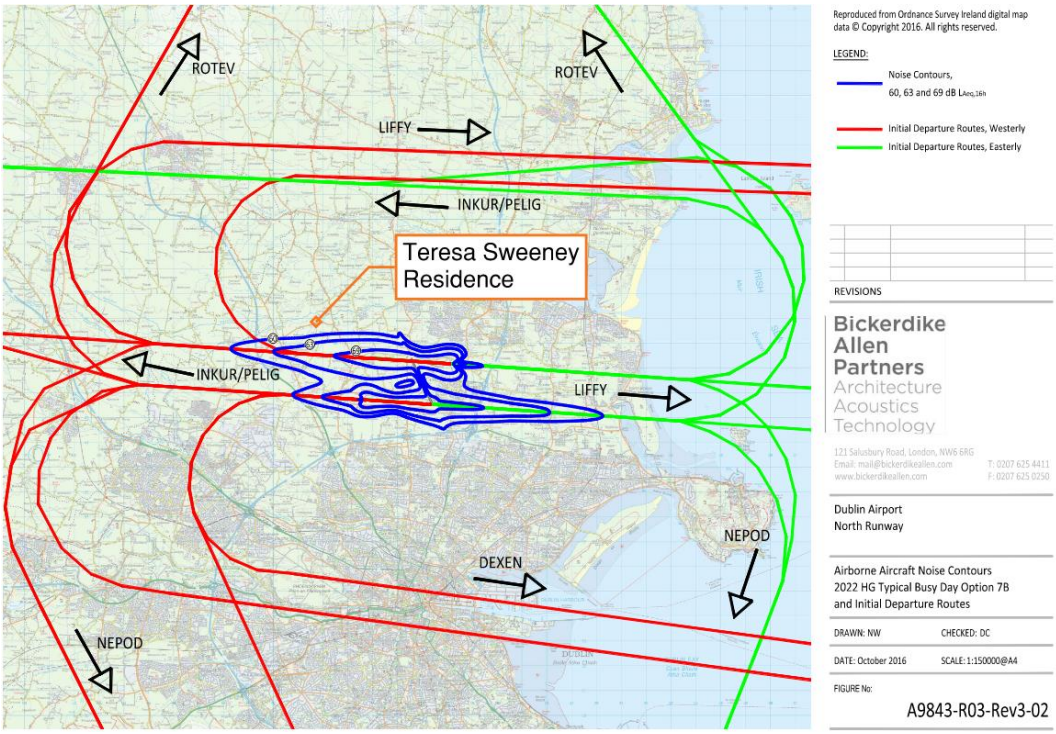


Figure 5: Predicted $L_{Aeq,16hour}$ (07:00 – 23:00) airport noise contours with North Runway in operation.

Noise contour maps presented in the most recently submitted EIAR supplement by DAA provided to ABP place Teresa Sweeney's dwelling outside the 63 dB $L_{Aeq,16hr}$ contour for the 2025 year scenario. Given that the measurements were undertaken during the summer of 2023 and they find noise levels are 65dB $L_{Aeq,16hr}$ it would indicate that the predicted noise contours from the aircraft flyovers do not match the actual measured values. This would place doubts on the accuracy of the predicted DAA contours when compared to real live measured data.

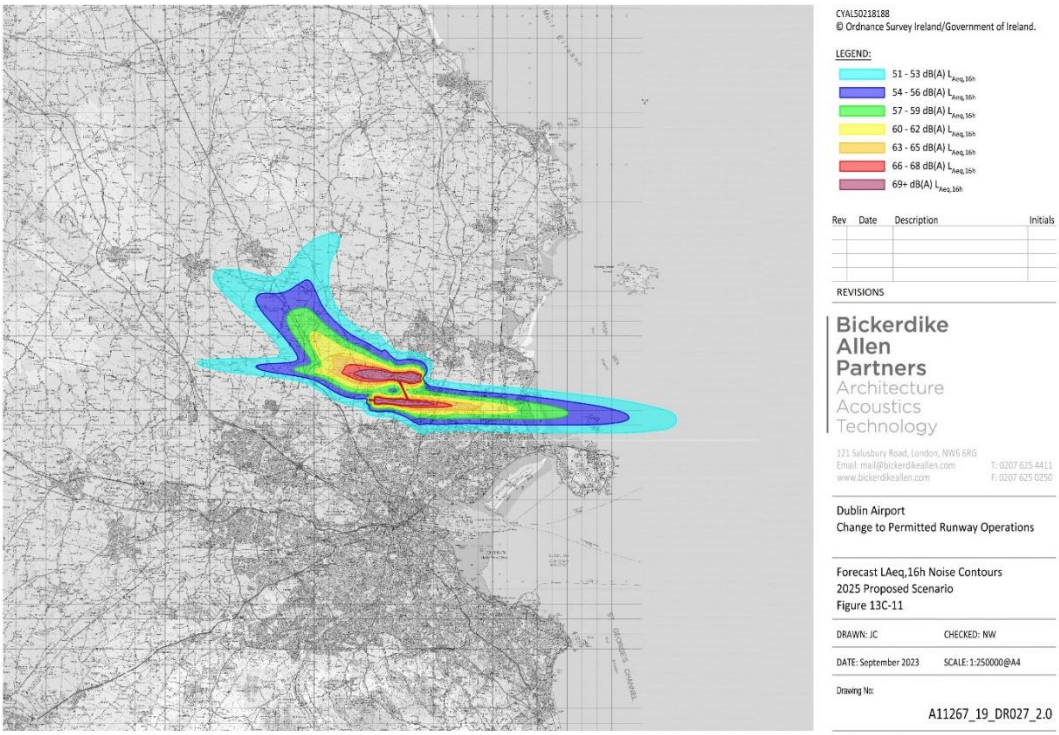


Figure 6: DAA predicted LAeq,16hour (07:00 - 23:00) airport noise contours for 2025.

An inward noise impact assessment was undertaken on the site previously as part of the planning application for the house which is outlined in AWN report JH/14/SSNR01 (Decision No. PF/1409/14 Reg Ref. F14A/0416). The assessment included a noise survey on the site. The survey was undertaken on 4th and 5th December 2014 prior to the commencement of the North Runway. The daytime recorded noise levels at the site (07:00hrs – 23:00hrs) were 52-53dBA for both days.

Comparing this to the current daytime noise levels at the site over the 92-monitoring period of 65dBA shows a significant increase in the onset noise levels at the dwelling from aircraft take offs on the North Runway. This equates to an increase of 12-13dBA of the onset noise levels on the site for the daytime period. A noise increase of that magnitude is very significant.

3.2 L_{night} Noise Levels

As discussed the measured L_{night} noise levels at Teresa Sweeney's property is relatively low often in the range of 43 to 45 dB L_{night}. The proposed Relevant Action application will see an increase in night noise at the property. In the year 2025, the L_{night} noise levels with the proposed development in place will result in noise levels increasing to be of the order of 55 to 59dB L_{night}. This is a significant increase on the existing onset noise levels from aircraft on the dwelling.

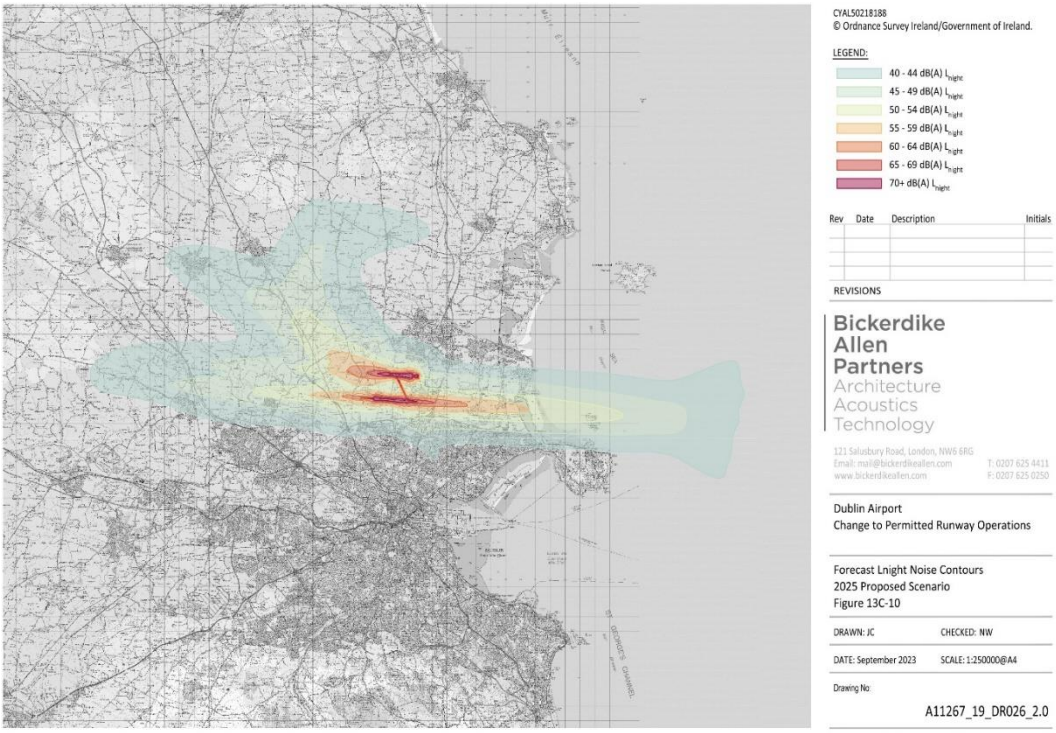


Figure 7: DAA predicted L_{night} airport noise contours for 2025.

To establish the aircraft noise impact of the North Runway, Tables 13-2 and 13-3 (shown below in Figure 8 and Figure 9) of the *Dublin Airport North Runway EIAR Volume 2 – Main Report* can be used to determine both the absolute noise level and the change in noise level due to the North Runway operations.

Based on the predicted L_{night} noise at the residence with the proposed development in place, as outlined in this section, an air noise impact scale description of "High" is appropriate for L_{night}. Pairing this with a change in noise level of greater than 9dB due to North Runway operations to give a relative noise impact scale of "Very High" the magnitude of the effect of the North Runway can be described as "Profound" as per Table 13-4 of the *Dublin Airport North Runway EIAR Volume 2 – Main Report.*

Given the discrepancy between daytime noise levels measured versus contours predicted by DAA it is likely that the L_{night} noise impact here is being underestimated.

Table 13-2: Air Noise Impact Criteria (absolute) – residential

Scale Description	Annual dB Lden	Annual dB Lnight
Negligible	<45	<40
Very Low	45 – 49.9	40 – 44.9
Low	50 – 54.9	45 – 49.9
Medium	55 – 64.9	50 – 54.9
High	65 – 69.9	55 – 59.9
Very High	≥70	≥60

Figure 8: Dublin Airport North Runway EIAR Volume 2 – Main Report Table 13-2: Air Noise Impact Criteria (absolute)

Table 13-3: Air Noise Impact Criteria (relative)

Scale Description	Change in noise level, dB(A)
Negligible	0 – 0.9
Very Low	1 – 1-9
Low	2 – 2.9
Medium	3 – 5.9
High	6 – 8.9
Very High	≥9

Figure 9: Dublin Airport North Runway EIAR Volume 2 – Main Report Table 13-3: Air Noise Impact Criteria (relative)

3.2.1 Calculation of $L_{Aeq,16hr}$ Noise Levels from SEL Measurements

Based on the SEL measurements undertaken at the residence in combination with the information submitted by DAA to ANCA as part of the response to ANCA's review of the 2022 airport noise emission outlining the number of flights per aircraft type (included in Appendix B) the $L_{Aeq,16hr}$ noise levels at the residence can be calculated to be compared with the unattended measurement results to confirm validity. The noise level for each aircraft type can be calculated using the following formula and then logarithmically added to predict the daily $L_{Aeq,16hour}$ level as follows:

$$LAeq = L_{AX} - 10*\log_{10}(d1/d2) + 10*\log_{10}(N) - 10*\log_{10}(T)$$

Where:

L_{Ax} measured SEL
N number of vehicle movements
T time (seconds)
d1 distance from the source to the receiver
d2 distance from the source to the measurement

A correction was then applied to the results to account for days of Easterly winds which totalled 12 days over the 92 day duration. Based on the above calculation and the recorded SEL for each aircraft type outlined in Table 2 the predicted $L_{Aeq,16hour}$ during the 92 day summer period in 2023 is 65dB(A).

This shows good agreement with the typical $L_{Aeq,16hour}$ measured over the full 92 day period of 65dB(A). Both the predicted $L_{Aeq,16hour}$ calculated from the attended measurements and the measured $L_{Aeq,16hour}$ exceed the DAA predicted 92 day contour map level at the residence which predicted less than 60 dBA for aircraft noise exposure.

3.3 Comparison of SEL Noise Levels

Sound exposure level (SEL) contours have been predicted by the DAA and their acoustic consultants Bickerdike Allen in relation to the noise abatement departure procedures (NADP) for the North Runway for the most common aircraft types:

- Boeing 737-800
- Airbus A320
- Airbus A330

The predicted SEL contours are shown for the above referenced aircraft type in Figure 10, Figure 11 and Figure 12 below, respectively.

For the DAA predicted SEL contours for the Boeing 737-800 as shown in Figure 10 below, Teresa Sweeney's residence currently lies just inside the 80dB(A) contour. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level ranged 88 – 93 dB(A) for the Boeing 737-8AS with a logarithmical average SEL of 90dB(A), and 85 – 86 dB(A) for the Boeing 737-8200. This highlights a significant exceedance of the predicted SEL noise levels by up to 13dB(A).

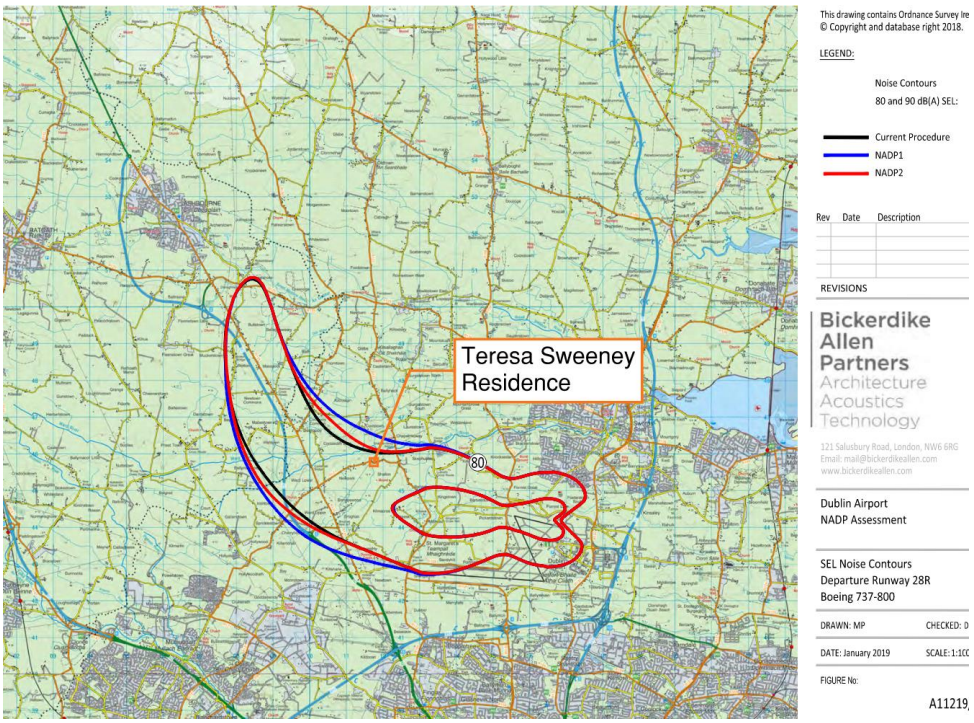


Figure 10: Predicted Sound Exposure Level noise contours for Boeing 737-800 for North Runway operation.

For the DAA predicted SEL contours for the Airbus A320 as shown in Figure 11 below, Teresa Sweeney's residence currently lies just outside the 80dB(A) contour for all departure procedures. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level ranged 80 – 88 dB(A) for the Airbus A320 with a logarithmical average SEL of 86dB(A). This highlights a significant exceedance of the predicted SEL noise levels by up to 8dB(A).

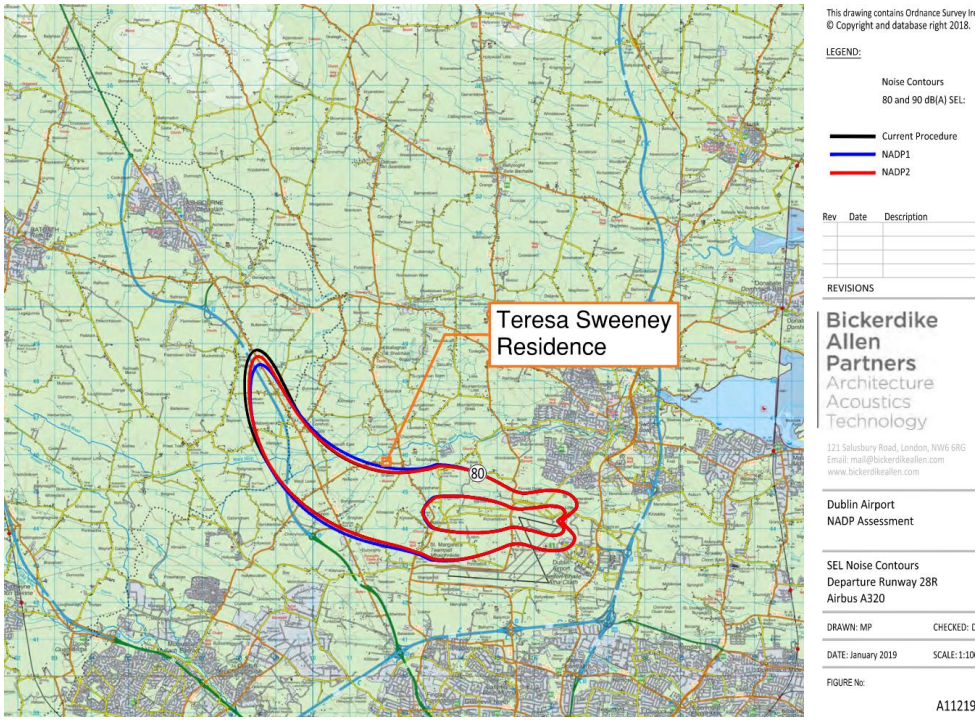


Figure 11: Predicted Sound Exposure Level noise contours for Airbus A320 for North Runway operation .

For the DAA predicted SEL contours for the Airbus A330 as shown in Figure 12 below, Teresa Sweeney's residence currently lies between the 80dB(A) and 90dB(A) contour all departure procedures. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level was 95 dB(A) for the Airbus A330 for all measurements. This highlights a significant exceedance of the predicted SEL noise levels in excess of 5dB(A).

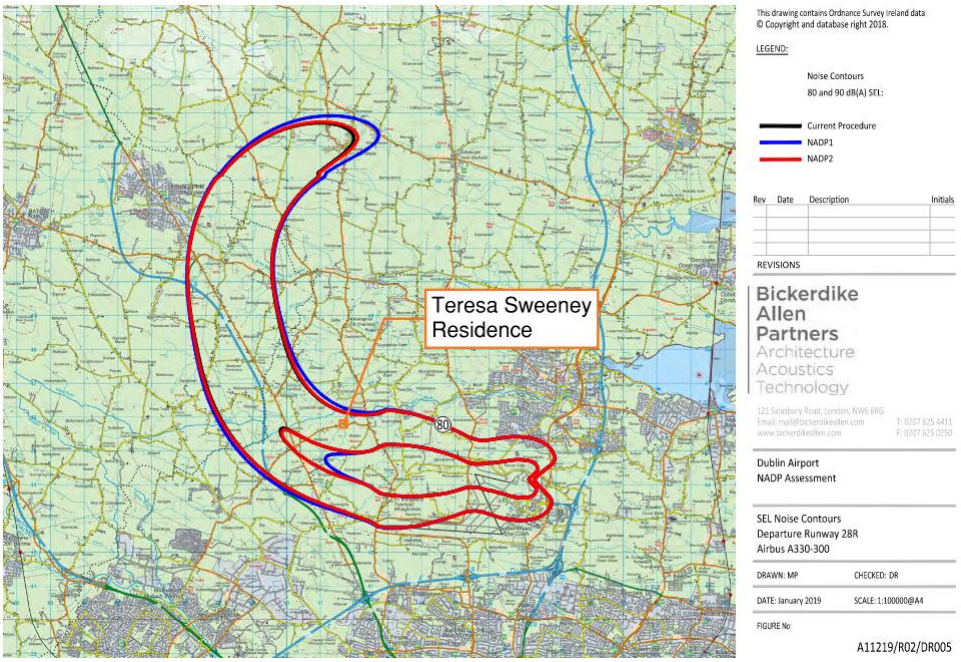


Figure 12: Predicted Sound Exposure Level noise contours for Airbus A320 for North Runway operation .

3.4 L_{Amax} Noise Levels

Based on the unattended measurement results, the $L_{ASmax,1min}$ measurement data has been correlated to the aircraft type for each takeoff over the monitoring period. This section outlines a comparison of the DAA predicted L_{Amax} noise levels with the measured L_{ASmax} noise levels recorded at the Teresa Sweeney residence for the four most common aircraft types.

- Boeing 737-800
- Boeing 737max
- Airbus A320
- Airbus A330

Boeing 737

Figure 13 below outlines the number of L_{ASmax} occurrences for Boeing 737 aircraft over the full 92 day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Boeing 737-800 are shown further below in Figure 14 which place Teresa Sweeney's residence on the edge of the 70dB contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels show a significant increase at the residence due to aircraft takeoffs. The modal L_{ASmax} value recorded at the residence for Boeing 737 aircraft was 80dB, with 691 occurrences. This is a significant increase over the DAA predicted maximum noise levels by 10dB.

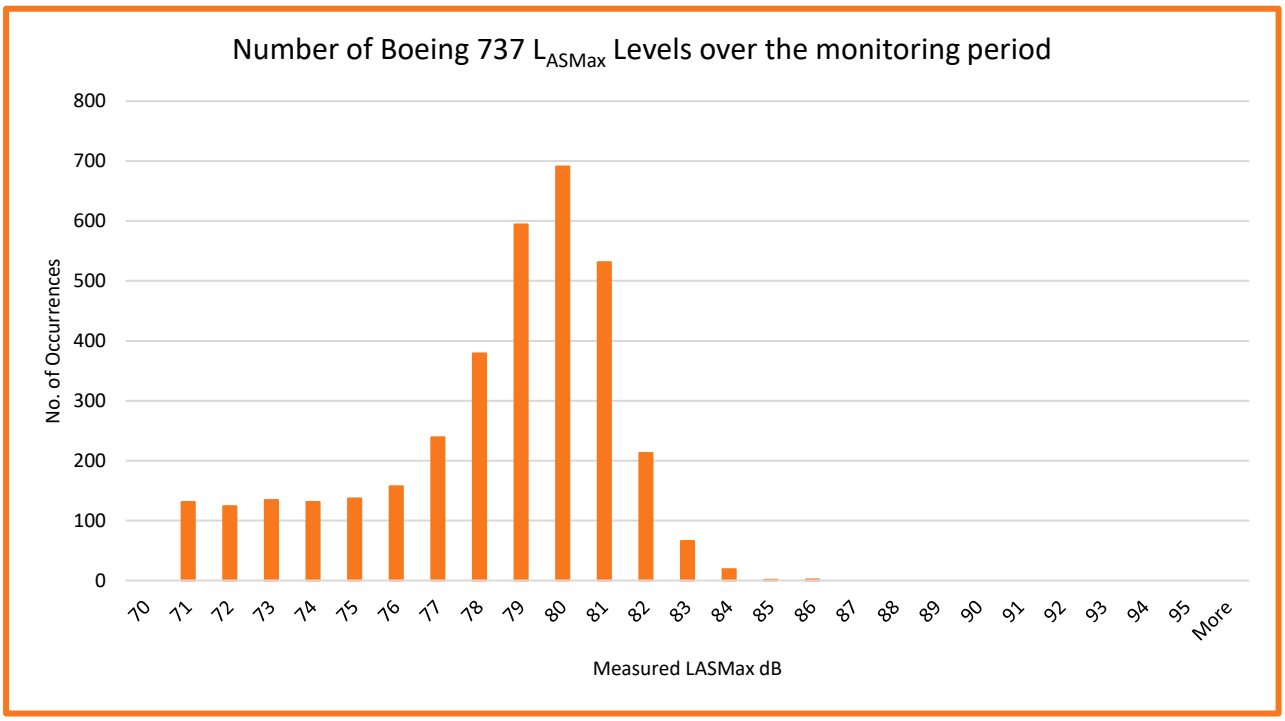


Figure 13: Number of Boeing 737 $L_{ASmax,1min}$ noise levels over the monitoring period

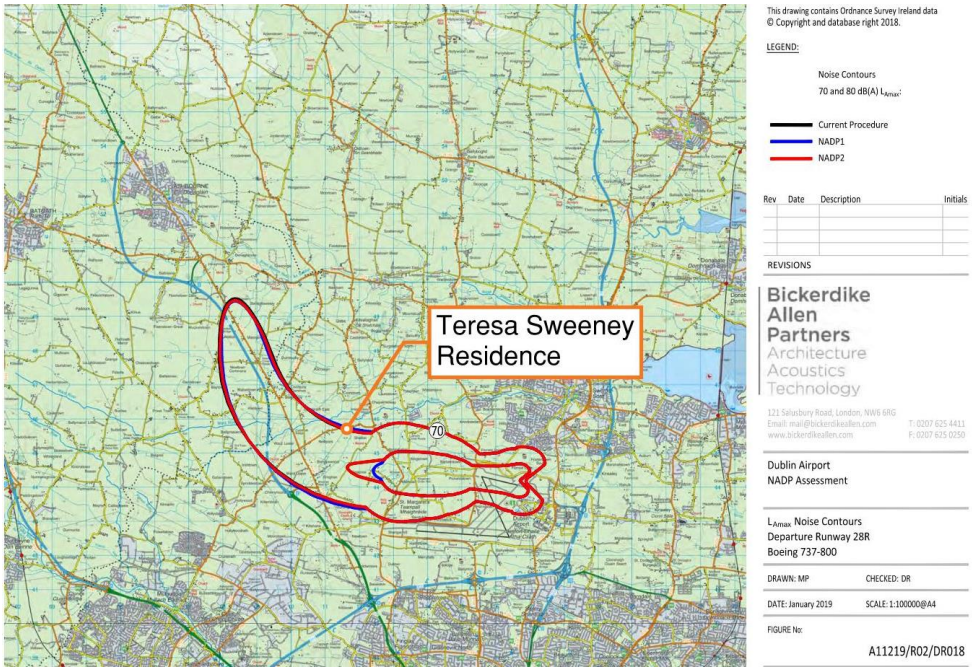


Figure 14: DAA predicted LAmax noise contours for Boeing 737-800

In addition, the recorded L_{ASmax} noise levels for the Boeing 737-max aircraft have been plotted as shown in Figure 15 below which shows a modal L_{ASmax} of 76dB with 283 occurrences. This shows an exceedance of 6dB over the DAA predicted maximum noise levels.

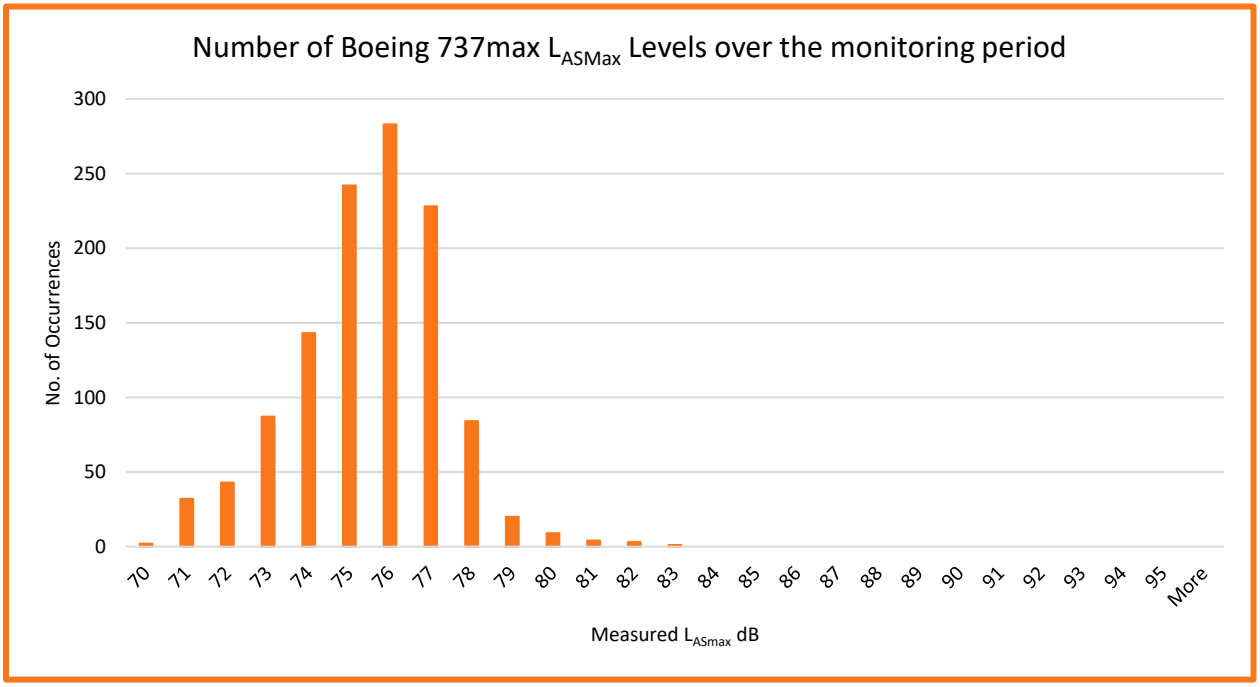


Figure 15: Number of Boeing 737-max $L_{ASmax,1min}$ noise levels over the monitoring period

Airbus A320

Figure 16 below outlines the number of L_{ASmax} occurrences for Airbus A320 aircraft over the full 92 day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Airbus A320 are shown further below in Figure 17 which place Teresa Sweeney's residence outside the 70dB contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels show a significant exceedance at the residence due to aircraft takeoffs. The modal L_{ASmax} value recorded at the residence for Airbus A320

aircraft was 78dB, with 677 occurrences. This is an exceedance of the DAA predicted maximum noise levels by a minimum of 8dB however in reality the exceedance is likely higher than this.

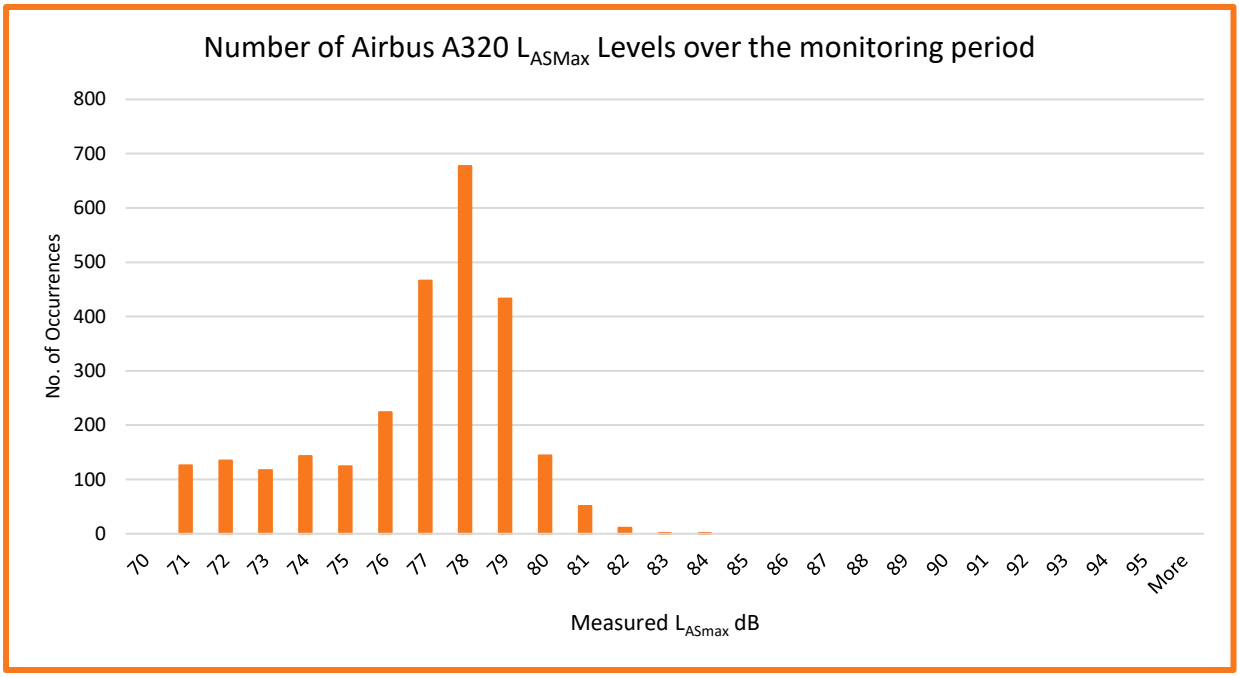


Figure 16: Number of Airbus A320 $L_{ASmax,1min}$ noise levels over the monitoring period

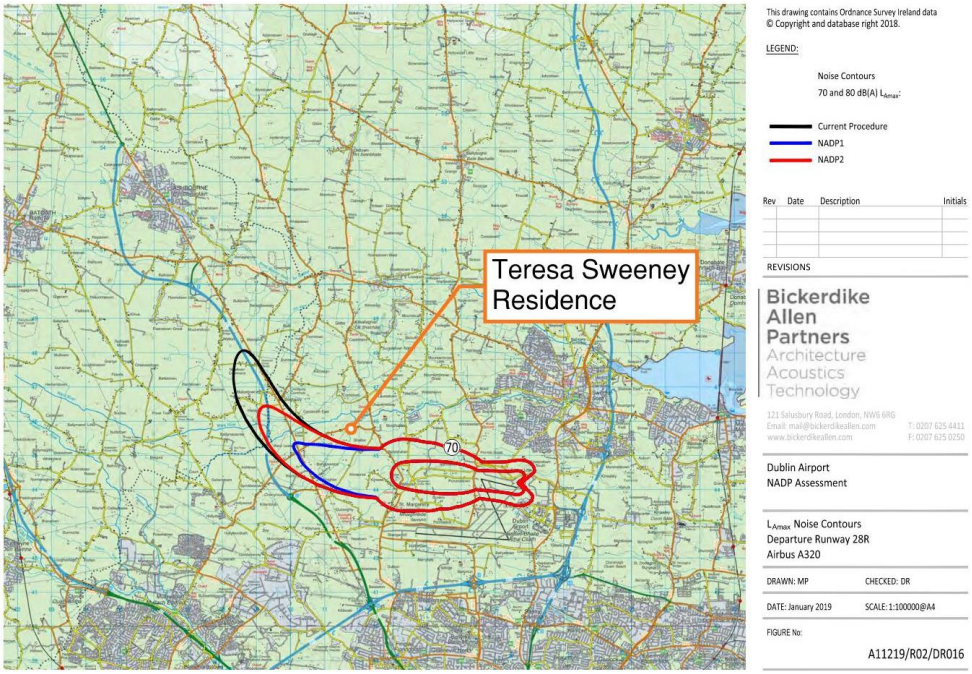


Figure 17: DAA predicted LAmax noise contours for Airbus A320

Airbus A330

Figure 18 below outlines the number of L_{ASmax} occurrences for Airbus A320 aircraft over the full 92 day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Airbus A320 are shown further below in Figure 19 which place Teresa Sweeney's residence on the edge of the 70dB contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels show a significant exceedance at the residence due to aircraft takeoffs. The modal L_{ASmax} value recorded at the

residence for Airbus A330 aircraft was 83dB, with 78 occurrences. This is an exceedance of the DAA predicted maximum noise levels by a minimum of 13dB, in addition to many recorded levels higher than 83dB.

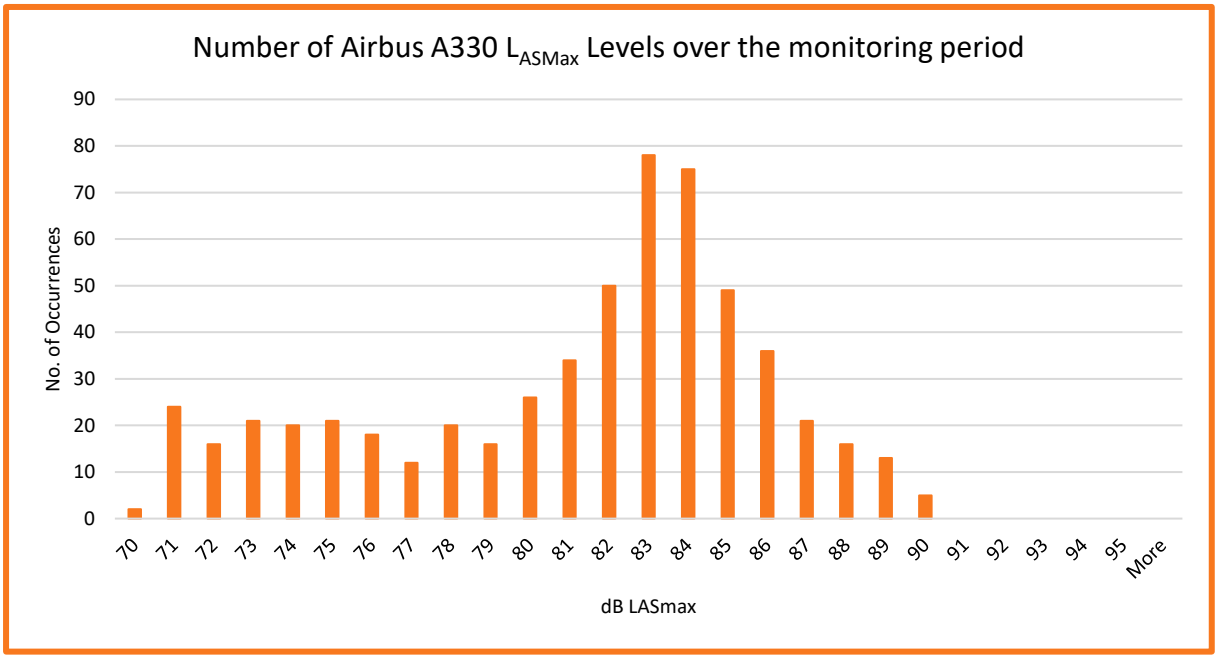


Figure 18: Number of Airbus A330 $L_{ASmax,1min}$ noise levels over the monitoring period

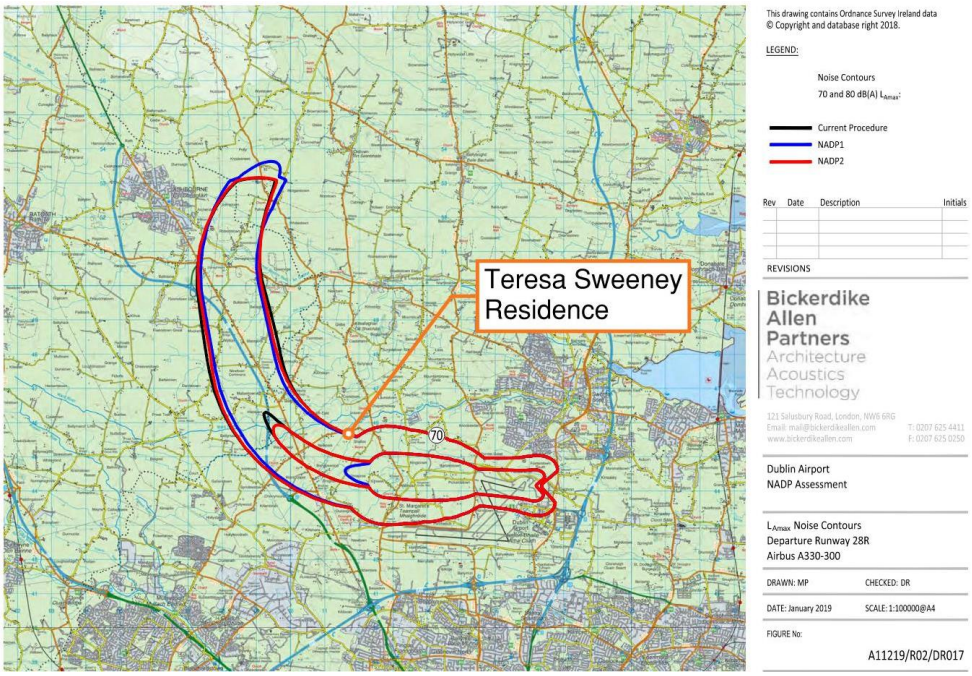


Figure 19: DAA predicted LAmax noise contours for Airbus A330

3.5 External Amenity Spaces

To consider the noise impact of aircraft noise on the residence, the recorded noise levels have been compared to the industry criteria for the external amenity spaces. ProPG 2017 and BS8233:2014 provide the following guidance in relation to external amenity spaces which state that:

> "*the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$".*

Based on the noise monitoring results where the prevailing wind was easterly and therefore aircraft were taking off to the east from the South Runway, it can be determined that the $L_{Aeq,16hour}$ noise levels at the residence were typically in the range of 53 – 55dB(A). This is in line with the ProPG 2017 and BS8233 criteria for external amenity noise levels. The noise levels recorded during days of easterly winds indicate that the noise levels at the residence are so low such that the higher noise levels caused by aircraft take offs during westerly winds are not affected by any other non-aircraft noise sources.

As outlined in Section 3.1, the average daytime noise levels at the residence rose to 65dB(A) when averaged over the full 92 day period and had a median value of 66dB(A). This is an increase of approximately 10-12dB due to North Runway operations and is an exceedance of the industry criteria for external amenity noise levels based on the measured noise levels without aircraft. This is an increase of 12-13 dB when compared with the 2014 site survey.

4 Conclusion

Following the commencement of operations of the new Dublin Airport North Runway, Wave Dynamics were engaged by Teresa Sweeney to review the 92-day unattended noise monitoring results and undertake sound exposure level measurements at Newpark, The Ward, Dublin, D11 EF2R

The objective of the assessment was to quantify the existing noise environment and the current noise levels from aircraft noise following the commencement of the operation of the North Runway. The measured noise levels have been compared with the predicted noise levels from the DAA noise contours and industry criteria.

Based on the results of the unattended noise monitoring at the residence, a 92 day average $L_{Aeq,16hour}$ of 65dB(A) was recorded which shows a significant exceedance of the DAA predicted contour maps which predict a level of less than 60dB(A) over the same 92 day period.

Sound exposure level measurements have also been taken at the residence and thus used to calculate the 92 day average $L_{Aeq,16hour}$ based on the number of aircraft types over the 92 day period which predicted an $L_{Aeq,16hour}$ of 65dB(A).

Both the predicted $L_{Aeq,16hour}$ calculated from the attended measurements and the measured $L_{Aeq,16hour}$ exceed the DAA predicted 92 day contour map level at the residence which predicted less than 60 dBA for aircraft noise exposure. In addition these have been compared to the DAA 2025 predicted noise contours which are 63dBA at the dwelling. The measurements undertaken in 2023 do not correlate with the most recent DAA noise contours this places doubts over the accuracy of the DAA contours when compared to actual measured data from the same period.

The DAA predicted L_{night} contours have been compared to the existing nighttime noise levels at the dwelling. Based on the *Dublin Airport North Runway EIAR Volume 2 – Main Report* it is likely that commencement of nighttime flights will have a "Profound" impact on the noise levels at the residence.

Sound exposure level measurements for the three most common aircraft types were also compared to the DAA predicted noise contours for the same aircraft types which showed exceedances for all three aircraft types of up to 13dB(A).

L_{ASmax} values over the full 92 day monitoring period for the three most common aircraft types were compared to the DAA predicted noise contours for the same aircraft types. All three aircraft types showed exceedances over the predicted maximum noise levels with the worst case aircraft having a modal L_{ASmax} value of 13dBA in excess of the predicted noise levels.

Appendix A- Glossary of Terms

dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μPa).
dB(A)	An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'–weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Hertz	The unit of sound frequency in cycles per second.
L_{A90}	A-weighted sound level just exceeded for 90% of the measurement period and calculated by statistical analysis. See also the background noise level.
L_{Aeq}	A-weighted, equivalent continuous sound level.
L_{AFmax}	A-weighted, maximum, sound level measured with a fast time-constant - maximum is not peak

Appendix B – Volume of Flights per Aircraft Type

The volume of flights per aircraft type have been submitted to DAA by ANCA and are outlined below in Table 3.

Table 3: Volume of each aircraft type over the entire year and over summer period

Aircraft Type	2023						
	Annual Average				Summers Period		
	Annual Day	Annual Eve	Annual Night	Annual 24hr	Summer Day 16hr	Summer Night	Summer 24hr
Airbus A300	0	0	0	0	0	0	0
Airbus A306	595	298	298	1190	262	87	350
Airbus A319	2083	0	0	2083	612	0	612
Airbus A320	38379	10115	4165	52659	14246	1224	15470
Airbus A320neo	3273	1488	298	5058	1398	87	1486
Airbus A321	1785	893	595	3273	787	175	961
Airbus A321neo	5355	0	595	5950	1573	175	1748
Airbus A330	8628	0	893	9520	2535	262	2797
Airbus A330neo	0	0	0	0	0	0	0
Airbus A350	0	0	0	0	0	0	0
ATR 42	0	0	0	0	0	0	0
ATR 72	9223	2083	0	11305	3321	0	3321
BAe 146/Avro RJ	0	0	0	0	0	0	0
Boeing 737-400	595	1190	595	2380	524	175	699
Boeing 737-500	0	0	0	0	0	0	0
Boeing 737-700	0	0	0	0	0	0	0
Boeing 737-800	38974	10710	4463	54147	14596	1311	15907
Boeing 737 MAX	17553	6545	2975	27073	7079	874	7953
Boeing 757	2380	298	298	2975	787	87	874
Boeing 767	1190	1190	595	2975	699	175	874
Boeing 777	1190	0	595	1785	350	175	524
Boeing 777X	0	0	0	0	0	0	0
Boeing 787	3570	0	595	4165	1049	175	1224
Bombardier CS300	1190	595	0	1785	524	0	524
Bombardier Dash 8	595	0	0	595	175	0	175
Convair 580	0	0	0	0	0	0	0
Embraer E190/195	4165	1785	298	6248	1748	87	1835
Embraer E190-E2	595	0	0	595	175	0	175
HS748A	0	0	0	0	0	0	0
Lockheed C130	0	0	0	0	0	0	0
McDonnell Douglas	0	0	0	0	0	0	0
MD83	0	0	0	0	0	0	0
Piper PA34	0	0	0	0	0	0	0
Shorts SD330/360	0	0	0	0	0	0	0

Aircraft Type	2023						
	Annual Average				Summers Period		
	Annual Day	Annual Eve	Annual Night	Annual 24hr	Summer Day 16hr	Summer Night	Summer 24hr
Other	1488	298	0	1785	524	0	524
Total	**142804**	**37486**	**17255**	**197546**	**52964**	**5069**	**58034**

Appendix C - Unattended Noise Monitoring Results

Table 4 below outlines the noise levels recorded at location L1 over the period 14th of June 2023 to 17th of September 2023. The results are averaged over the following periods:

- $L_{Aeq,16hour}$ 07:00 – 23:00
- $L_{Aeq,8hour}$ 23:00 – 07:00

Table 4: Unattended Measurement Results

Date	Start Time	End Time	Average $L^{Aeq,T}$
14/06/2023	07:00	23:00	53
14/06/2023	23:00	07:00	48
15/06/2023	07:00	23:00	54
15/06/2023	23:00	07:00	48
16/06/2023	07:00	23:00	58
16/06/2023	23:00	07:00	47
17/06/2023	07:00	23:00	53
17/06/2023	23:00	07:00	43
18/06/2023	07:00	23:00	52
18/06/2023	23:00	07:00	47
19/06/2023	07:00	23:00	64
19/06/2023	23:00	07:00	47
20/06/2023	07:00	23:00	59
20/06/2023	23:00	07:00	47
21/06/2023	07:00	23:00	64
21/06/2023	23:00	07:00	48
22/06/2023	07:00	23:00	56
22/06/2023	23:00	07:00	47
23/06/2023	07:00	23:00	65
23/06/2023	23:00	07:00	47
24/06/2023	07:00	23:00	64
24/06/2023	23:00	07:00	46
25/06/2023	07:00	23:00	65
25/06/2023	23:00	07:00	48
26/06/2023	07:00	23:00	65
26/06/2023	23:00	07:00	48
27/06/2023	07:00	23:00	64
27/06/2023	23:00	07:00	48
28/06/2023	07:00	23:00	65
28/06/2023	23:00	07:00	49
29/06/2023	07:00	23:00	64
29/06/2023	23:00	07:00	47
30/06/2023	07:00	23:00	64
30/06/2023	23:00	07:00	48
01/07/2023	07:00	23:00	64
01/07/2023	23:00	07:00	46
02/07/2023	07:00	23:00	65
02/07/2023	23:00	07:00	48
03/07/2023	07:00	23:00	64

Date	Start Time	End Time	Average $L^{Aeq,T}$
03/07/2023	23:00	07:00	49
04/07/2023	07:00	23:00	66
04/07/2023	23:00	07:00	49
05/07/2023	07:00	23:00	66
05/07/2023	23:00	07:00	48
06/07/2023	07:00	23:00	63
06/07/2023	23:00	07:00	49
07/07/2023	07:00	23:00	56
07/07/2023	23:00	07:00	49
08/07/2023	07:00	23:00	64
08/07/2023	23:00	07:00	45
09/07/2023	07:00	23:00	65
09/07/2023	23:00	07:00	46
10/07/2023	07:00	23:00	62
10/07/2023	23:00	07:00	55
11/07/2023	07:00	23:00	65
11/07/2023	23:00	07:00	53
12/07/2023	07:00	23:00	66
12/07/2023	23:00	07:00	48
13/07/2023	07:00	23:00	66
13/07/2023	23:00	07:00	46
14/07/2023	07:00	23:00	59
14/07/2023	23:00	07:00	48
15/07/2023	07:00	23:00	65
15/07/2023	23:00	07:00	49
16/07/2023	07:00	23:00	66
16/07/2023	23:00	07:00	49
17/07/2023	07:00	23:00	66
17/07/2023	23:00	07:00	46
18/07/2023	07:00	23:00	62
18/07/2023	23:00	07:00	46
19/07/2023	07:00	23:00	66
19/07/2023	23:00	07:00	51
20/07/2023	07:00	23:00	66
20/07/2023	23:00	07:00	51
21/07/2023	07:00	23:00	66
21/07/2023	23:00	07:00	47
22/07/2023	07:00	23:00	66
22/07/2023	23:00	07:00	45
23/07/2023	07:00	23:00	61
23/07/2023	23:00	07:00	45
24/07/2023	07:00	23:00	66
24/07/2023	23:00	07:00	47
25/07/2023	07:00	23:00	66
25/07/2023	23:00	07:00	48
26/07/2023	07:00	23:00	63
26/07/2023	23:00	07:00	47
27/07/2023	07:00	23:00	66
27/07/2023	23:00	07:00	47
28/07/2023	07:00	23:00	66

Date	Start Time	End Time	Average $L^{Aeq,T}$
28/07/2023	23:00	07:00	47
29/07/2023	07:00	23:00	66
29/07/2023	23:00	07:00	46
30/07/2023	07:00	23:00	67
30/07/2023	23:00	07:00	47
31/07/2023	07:00	23:00	65
31/07/2023	23:00	07:00	48
01/08/2023	07:00	23:00	66
01/08/2023	23:00	07:00	47
02/08/2023	07:00	23:00	64
02/08/2023	23:00	07:00	46
03/08/2023	07:00	23:00	66
03/08/2023	23:00	07:00	47
04/08/2023	07:00	23:00	66
04/08/2023	23:00	07:00	53
05/08/2023	07:00	23:00	65
05/08/2023	23:00	07:00	45
06/08/2023	07:00	23:00	66
06/08/2023	23:00	07:00	46
07/08/2023	07:00	23:00	66
07/08/2023	23:00	07:00	47
08/08/2023	07:00	23:00	66
08/08/2023	23:00	07:00	47
09/08/2023	07:00	23:00	66
09/08/2023	23:00	07:00	45
10/08/2023	07:00	23:00	54
10/08/2023	23:00	07:00	48
11/08/2023	07:00	23:00	66
11/08/2023	23:00	07:00	47
12/08/2023	07:00	23:00	66
12/08/2023	23:00	07:00	45
13/08/2023	07:00	23:00	66
13/08/2023	23:00	07:00	47
14/08/2023	07:00	23:00	66
14/08/2023	23:00	07:00	46
15/08/2023	07:00	23:00	66
15/08/2023	23:00	07:00	48
16/08/2023	07:00	23:00	63
16/08/2023	23:00	07:00	46
17/08/2023	07:00	23:00	55
17/08/2023	23:00	07:00	46
18/08/2023	07:00	23:00	56
18/08/2023	23:00	07:00	54
19/08/2023	07:00	23:00	66
19/08/2023	23:00	07:00	46
20/08/2023	07:00	23:00	67
20/08/2023	23:00	07:00	48
21/08/2023	07:00	23:00	66
21/08/2023	23:00	07:00	48
22/08/2023	07:00	23:00	66

Date	Start Time	End Time	Average $L^{Aeq,T}$
22/08/2023	23:00	07:00	48
23/08/2023	07:00	23:00	66
23/08/2023	23:00	07:00	47
24/08/2023	07:00	23:00	66
24/08/2023	23:00	07:00	48
25/08/2023	07:00	23:00	67
25/08/2023	23:00	07:00	46
26/08/2023	07:00	23:00	66
26/08/2023	23:00	07:00	45
27/08/2023	07:00	23:00	66
27/08/2023	23:00	07:00	47
28/08/2023	07:00	23:00	66
28/08/2023	23:00	07:00	48
29/08/2023	07:00	23:00	66
29/08/2023	23:00	07:00	48
30/08/2023	07:00	23:00	67
30/08/2023	23:00	07:00	46
31/08/2023	07:00	23:00	63
31/08/2023	23:00	07:00	46
01/09/2023	07:00	23:00	67
01/09/2023	23:00	07:00	45
02/09/2023	07:00	23:00	65
02/09/2023	23:00	07:00	45
03/09/2023	07:00	23:00	66
03/09/2023	23:00	07:00	46
04/09/2023	07:00	23:00	63
04/09/2023	23:00	07:00	50
05/09/2023	07:00	23:00	55
05/09/2023	23:00	07:00	49
06/09/2023	07:00	23:00	63
06/09/2023	23:00	07:00	50
07/09/2023	07:00	23:00	55
07/09/2023	23:00	07:00	49
08/09/2023	07:00	23:00	62
08/09/2023	23:00	07:00	46
09/09/2023	07:00	23:00	66
09/09/2023	23:00	07:00	44
10/09/2023	07:00	23:00	66
10/09/2023	23:00	07:00	46
11/09/2023	07:00	23:00	63
11/09/2023	23:00	07:00	46
12/09/2023	07:00	23:00	66
12/09/2023	23:00	07:00	48
13/09/2023	07:00	23:00	66
13/09/2023	23:00	07:00	48
14/09/2023	07:00	23:00	67
14/09/2023	23:00	07:00	47
15/09/2023	07:00	23:00	67
15/09/2023	23:00	07:00	44
16/09/2023	07:00	23:00	65

Date	Start Time	End Time	Average $L^{Aeq,T}$
16/09/2023	23:00	07:00	44
17/09/2023	07:00	23:00	66

Technical Note

Project:	Cooquay, The Ward, Dublin	**Title:**	Noise Assessment
Job Number:	WDA230104	**Prepared By:**	Wil Oshoke
Date:	11/12/2023	**Reviewed By:**	Sean Rocks
Reference:	WDA230104TN_11_A_02	**Client:**	Breffni Conaty

1 Introduction

Following the commencement of operations of the new Dublin Airport North Runway, Wave Dynamics were engaged by Breffni Conaty to assess the noise levels from aircraft flyovers using long-term (92 Day) noise monitoring at Coolquay Common, The Ward, Dublin, D11 PD87.

The objective of the assessment was to quantify the existing noise environment and the current noise levels from aircraft noise during the operation of the North Runway. The measured noise levels have been compared with the predicted noise levels from the DAA noise contours and industry criteria.

1.1 Statement of Competence

This assessment and report were completed by Wil Oshoke, Principal Consultant with Wave Dynamics, who has extensive experience assessing noise impact. His qualifications include a PhD in Acoustics (Dublin City University – School of Electronic Engineering). Wil is a member of Engineers Ireland (MIEI), a Corporate member of the Institute of Acoustics (MIOA), and a Chartered Engineer (CEng) with the UK Engineering Council Via the Institute of Acoustics.

The assessment and report were peer-reviewed by Sean Rocks, Director | Senior Consultant; Sean has experience with aircraft noise, particularly for planning and complaints investigation. Sean's qualifications include a BEng (Hons) in Mechanical and Manufacturing Engineering, a Diploma in Acoustics and Noise Control (Institute of Acoustics), an IOA Certificate of Competence in Environmental Noise Measurement and SITRI certified sound insulation tester. Sean is a member of both Engineers Ireland and the Institute of Acoustics.

This project was led by James Cousins, Managing Director | Principal Consultant with Wave Dynamics who has extensive experience in assessing noise and vibration from road and rail infrastructure on commercial and residential developments. James is an experienced consultant. His qualifications include; BSc (Hons) in Construction Management and Engineering, Pg Cert in Construction Law and Diploma in Acoustics and Noise Control (Institute of Acoustics) and an IOA Competence Cert in Building Acoustic Measurements. James is a member of both Engineers Ireland (MIEI) and the Institute of Acoustics (MIOA) and is the current SITRI Chairman.

2 Baseline Noise Survey

Attended and unattended noise surveys were undertaken to quantify the noise levels from aircraft flyovers at the residence of Breffni Conaty D11 PD87. The attended noise measurements were conducted from 11:10hrs to 12:10hrs on the 13th of September 2023 and 11:17hrs to 14:20hrs on the 14th of September 2023. The unattended noise measurements were taken continuously from 04:30hrs on the 9th of June 2023 to 10:05hrs on 22/09/2023. Sound exposure level measurements were taken for aircraft flyovers during the attended survey.

2.1.1 Site Description and Measurement Locations

The site is on the R130 in Coolquay, The Ward, Dublin, as shown in Figure 1 below. The area is mainly agricultural, with sporadic residential dwellings and commercial properties. Dublin Airport is located to the residence's southeast, approximately 5 km from the edge of the new North Runway.

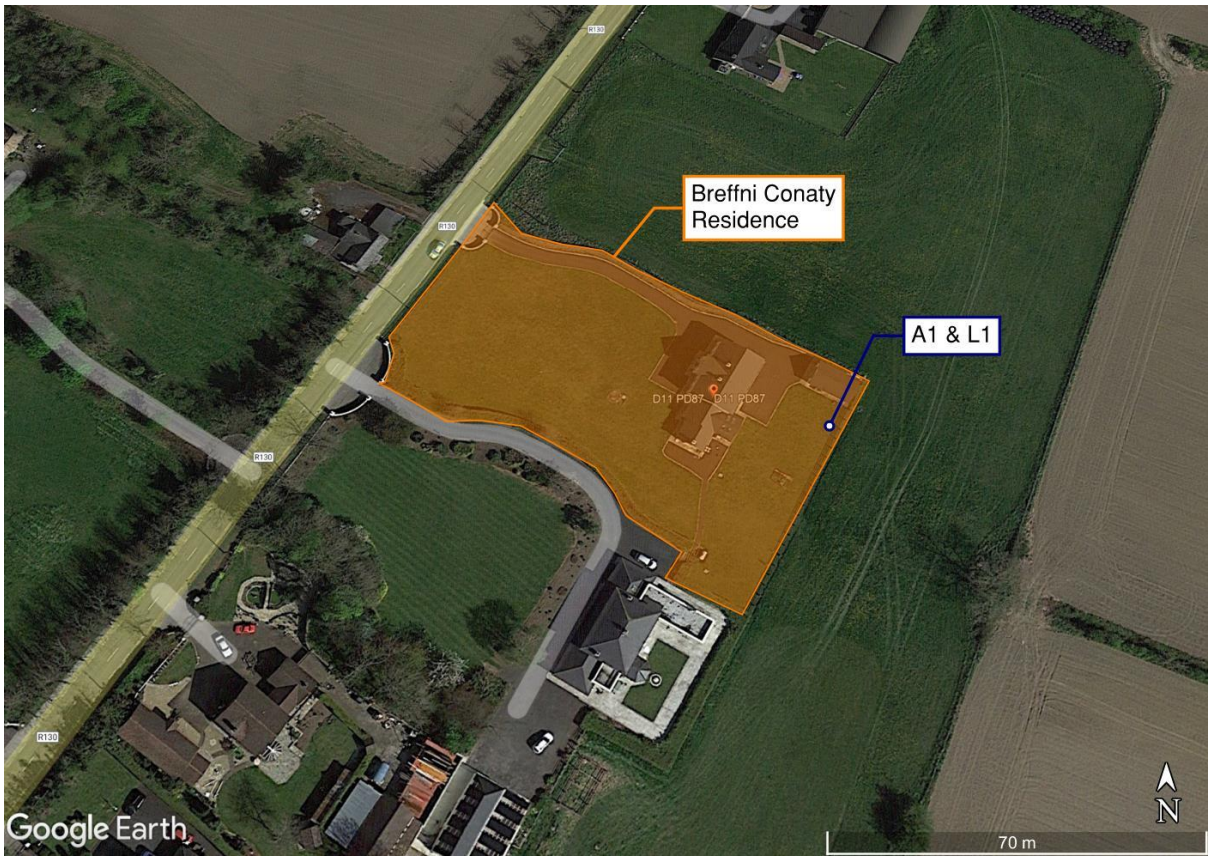


Figure 1: Site location and monitoring location L1 and SEL measurement location A1.



Figure 2: Site location in Relation to Dublin Airport and the new North Runway.

Unattended Noise Measurements

An unattended noise logger was deployed in location L1, as per Figure 1, to the rear garden of the residence. The logger was calibrated before and after the measurements, and no significant drift was noted. The logger was deployed at a height of approximately 1.5 m above the ground.

On review of the measurement data by WDA, days of unsuitable weather conditions had a negligible effect on the daily $L_{Aeq,16hour}$ values and $L_{ASmax,1min}$ measurements. It should be noted that the monitor stopped recording from 13:55hrs on 10th July to 10:09hrs on 11th July 2023. One night (night starting 18th of August) was affected by extraneous noise which has been filtered.



Figure 3: Noise Logger Setup

2.1.2 Survey Period

Based on the data review, the measurements commenced at 00:00hrs on Wednesday, the 14th of June 2023 and finished at 20:00hrs on Sunday, the 17th of September 2023. The measurement duration was set to 1-minute intervals. It is understood that the North Runway was operational throughout the measurement period, initially between 09:00hrs and 20:00hrs until 4 July 2023, after which the operating hours of the North Runway were 07:00hrs to 23:00hrs.

The measurement period was set in line with Dublin Airport's busiest 92-day period, 16th of June to 15th of September, around which the DAA contour maps are developed. Many of the Dublin Airport planning conditions have been set based on the predictions of noise levels over this 92-day period such as the home insulation scheme. The unattended noise monitoring undertaken allows for direct comparison of the measured noise levels to the DAA noise contour maps.

2.1.3 Noise Measurement Equipment

A Class 1 sound level meter/noise logger, in general accordance with IEC 61672-1:2013, was used for the attended measurements. Table 1 below summarises the measurement equipment used.

Table 1: Noise Measurement Equipment

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Sound Level Meter	SLM4	Nti XL2-TA	A2A-23316-E1	UK-23-100	01/09/2025
Calibrator	CAL1	Nor 1251	31056	AC230226	16/10/2024
Noise Monitor	-	EM2030-AO	01803	2301803	15/02/2024
Calibrator	Cal 2	Cirrus	99866	183284	16/11/2023

2.1.4 Subjective Noise Environment

Based on the information provided during the attended noise survey and logger deployment, the following noise sources were identified:

- Aircraft Noise from Aircraft Fly Overs.
- Road noise from the R130
- Birdsong
- Occasional activity from residents (cars arriving/departing, voices, etc.)

2.2 Noise Measurement Results

This section outlines the results of the attended noise survey.

Unattended Monitoring Results

Table 4 in Appendix C of this report outlines the results of the noise levels recorded at the noise monitoring location L1 over the full monitoring period averaged over the following periods:

- $L_{Aeq,16hour}$ 07:00 – 23:00
- $L_{Aeq,8hour}$ 23:00 – 07:00

Figure 4 below highlights each of the daytime $L_{Aeq,16hour}$ values and the number of times they occur over the full 92-day monitoring period. The graph indicates a significant modal value of 61 dBA with a total of 33 occurrences. This is 15 more occurrences than the next highest value at 60dBA (18 occurrences).

Based on the daily $L_{Aeq,16hour}$ measurements undertaken at the Breffni Conaty residence as shown in Figure 4, the logarithmically averaged $L_{Aeq,16hour}$ for the full 92-day period is 59 dBA.

A full breakdown of all the unattended measurement results is available on request.

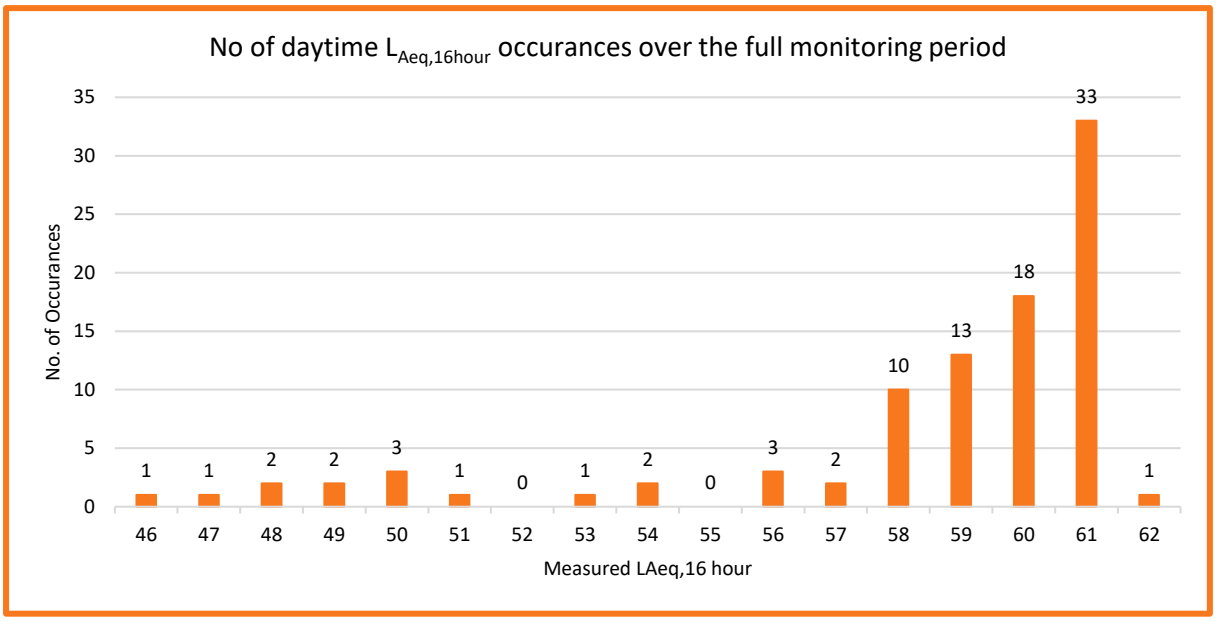


Figure 4: Number of daytime $L_{Aeq,16hour}$ occurrences over the full monitoring period

L_{night} values ranged from 39 to 53dB with an average of 45dB L_{night}.

Attended Monitoring Results

Table 2 outlines the results of the attended measurements for aircraft flyover noise levels at location A1. The flyover sound exposure levels have been calculated from the measured L_{Aeq} levels.

The sound exposure level (SEL) from aircraft flyovers has been calculated using the following equation to allow direct comparison of the measured levels with the DAA predicted SEL contour maps:

$$L_{AX} = LAeq + 10*\log_{10}(d1/d2) - 10*\log_{10}(N) + 10*\log_{10}(T)$$

Where:

L_{Ax} measured SEL
N number of vehicle movements
T time (seconds)
d1 distance from the source to the receiver
d2 distance from the source to the measurement

Table 2: Aircraft Flyover Noise Levels

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level
Location	Date	Time (hrs)	Duration (sec)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
A1	13/09/2023	11:11	45	Boeing 737-8AS	71	80	88
A1	13/09/2023	11:12	42	Airbus A380-25IV	67	80	83
A1	13/09/2023	11:14	37	ATR 72-600	53	60	69
A1	13/09/2023	11:17	47	DASSAULT FALCON 8X	63	73	80
A1	13/09/2023	11:25	51	Boeing 767-332(ER)	72	82	89
A1	13/09/2023	11:28	41	Embraer EI895AR	71	81	87
A1	13/09/2023	11:29	47	Boeing 737-8AS	68	77	85
A1	13/09/2023	11:31	31	ATR72-600	56	64	71
A1	13/09/2023	11:35	41	Airbus A320-251N	65	73	81
A1	13/09/2023	11:37	30	Embraer EI80STD	69	77	84
A1	13/09/2023	11:38	53	Bombardier Global 6000	65	77	82
A1	13/09/2023	11:40	40	Boeing 737-8AS	70	78	86
A1	13/09/2023	11:42	50	Airbus A330-302	73	82	90
A1	13/09/2023	12:00	45	Boeing 777-3IH(ER)	50	59	67
A1	14/09/2023	11:17	23	Airbus A320-214	70	77	84
A1	14/09/2023	11:25	41	Boeing 787-8 Dreamliner	69	79	85
A1	14/09/2023	11:28	54	Airbus A321-271NX	66	76	83
A1	14/09/2023	11:29	35	ATR 72-600	53	65	68
A1	14/09/2023	11:31	40	ATR 72-600	64	71	80
A1	14/09/2023	11:35	39	Boeing 737 MAX 8-200	66	73	82
A1	14/09/2023	11:37	42	Airbus A320-214	69	77	85
A1	14/09/2023	11:38	39	Airbus A320-214	70	78	86
A1	14/09/2023	11:40	45	Boeing 737 MAX 8-200	67	76	84
A1	14/09/2023	11:42	26	ATR 72-600	59	68	73
A1	14/09/2023	12:00	50	Boeing 777-3IH(ER)	73	82	90
A1	14/09/2023	14:00	44	Airbus A320-214	70	78	86
A1	14/09/2023	14:03	42	Boeing 737-8AS	70	78	86

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level
Location	Date	Time (hrs)	Duration (sec)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
A1	14/09/2023	14:06	45	Boeing 737-8AS	71	80	88
A1	14/09/2023	14:16	43	Boeing 737-8AS	71	80	87
A1	14/09/2023	14:18	40	Boeing 737 MAX 8-200	67	75	83
A1	14/09/2023	14:20	45	Airbus A320-25IN	63	73	80

1. SELs calculated on the rounded L_{Aeq} values measured.

3 Analysis of Results

3.1 $L_{Aeq,16hr}$ Noise Levels

The most recently predicted noise contours for the North Runway operation as per the 2007 planning permission are the compliance contours submitted to Fingal County Council in 2016. Here, the predicted $L_{Aeq,16hour}$ (07:00hrs to 23:00 hrs) noise contours for Dublin Airport with the North Runway operational can be seen in Figure 5. The noise contours are developed by DAA based on the busiest 92-day period of the year for the airport, 16th June to 15th September.

Based on the DAA contour maps, Breffni Conaty's residence is significantly outside the lowest predicted contour therefore noise from aircraft flyovers would be expected to be below 60 dB $L_{Aeq,16hour.}$ From the results of the unattended noise monitoring outlined in Table 4 (see Appendix C), the corresponding $L_{Aeq,16hour}$ averaged over the same 92-day period as the DAA contour maps is 59dB with a modal value of 61dB. This demonstrates that the measured levels at the residence exceed the predicted levels when compared to the 92-day monitoring period on which the contours are based.

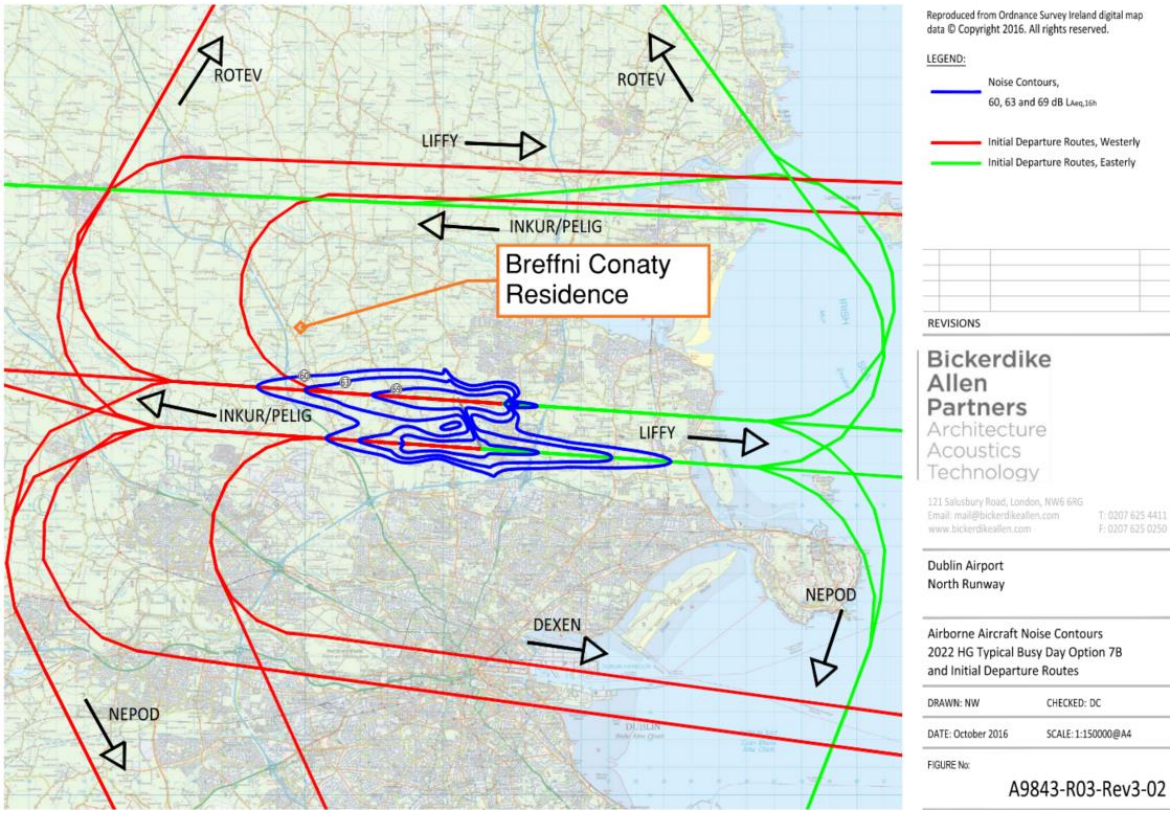


Figure 5: Predicted $L_{Aeq,16hour}$ (07:00 – 23:00) airport noise contours with North Runway in operation.

Noise contour maps presented in the most recently submitted EIAR supplement by DAA provided to ABP place Breffni Conaty's dwelling in the 57-59 dB $L_{Aeq,16hr}$ contour for the 2025-year scenario. Given that the measurements were undertaken during the summer of 2023 and they find noise levels are 59dB $L_{Aeq,16hr}$ it would indicate that the predicted noise contours from the aircraft flyovers are a lower case estimate than those typically experienced at the dwelling currently.

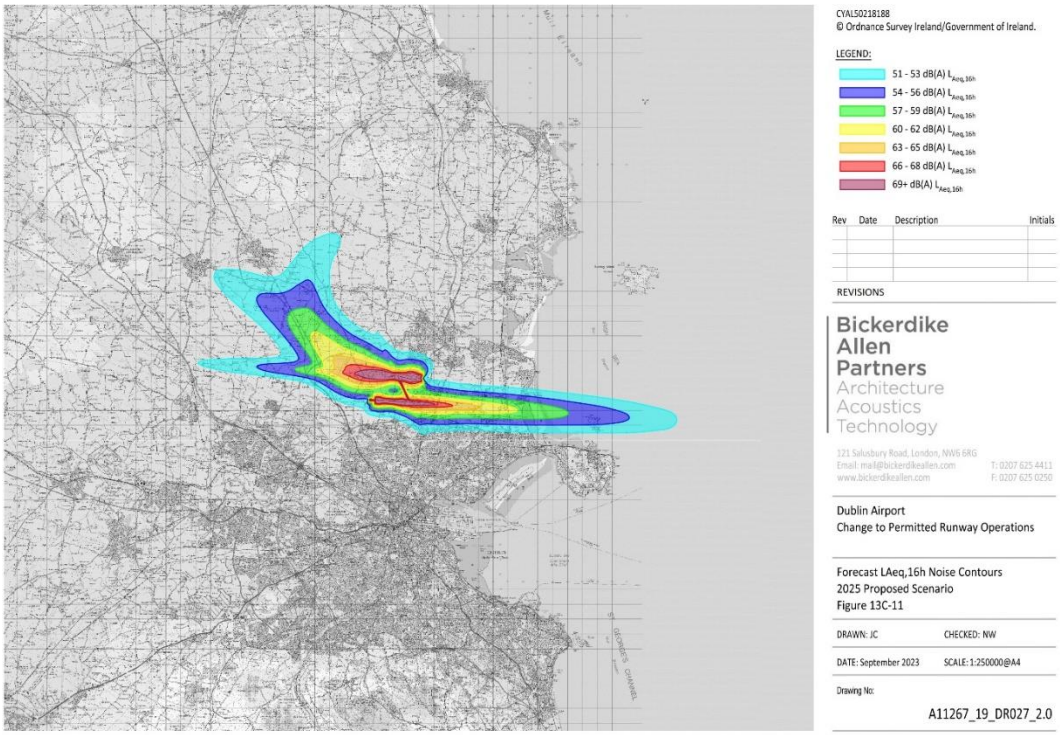


Figure 6: DAA predicted LAeq,16hour (07:00 - 23:00) airport noise contours for 2025.

3.2 L_{night} Noise Levels

As discussed the measured L_{night} noise levels at Breffni Conaty's property are relatively low often in the range of 43 to 46 dB L_{night} and an average of L_{night} 45dB over the 92 day period. The proposed Relevant Action application will see an increase in night noise at the property. In the year 2025 the L_{night} noise levels with the proposed development in place will result in noise levels increasing to be of the order of 50 to 54dB L_{night}.

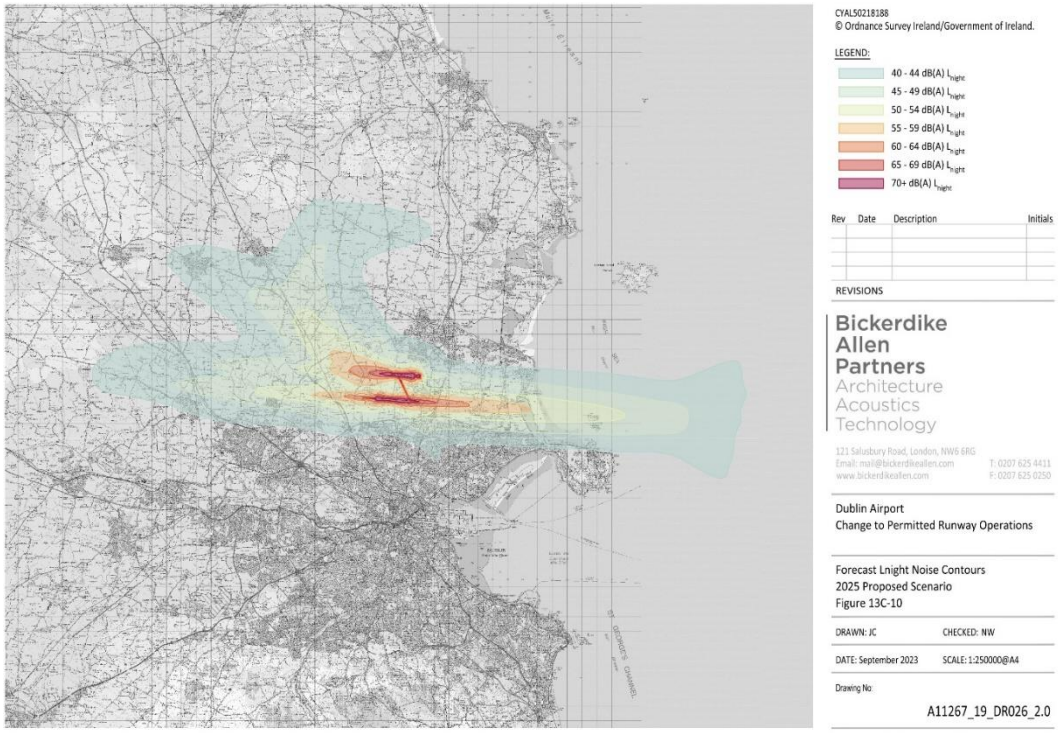


Figure 7: DAA predicted L_{night} airport noise contours for 2025.

To establish the aircraft noise impact of the North Runway, Tables 13-2 and 13-3 (shown below in Figure 8 and Figure 9) of the *Dublin Airport North Runway EIAR Volume 2 – Main Report* can be used to determine both the absolute noise level and the change in noise level due to the North Runway operations.

Based on the predicted L_{night} noise at the residence with the proposed development in place, as outlined in this section, an air noise impact scale description of "Medium" is appropriate for L_{night}. Pairing this with a change in the noise level of greater than 9dB due to North Runway operations to give a relative noise impact scale of "Very High" the magnitude of the effect of the North Runway can be described as "Very Significant" as per Table 13-4 of the *Dublin Airport North Runway EIAR Volume 2 – Main Report.*

Given the discrepancy between daytime noise levels measured versus contours predicted by DAA it is likely that the L_{night} noise impact here is being underestimated.

Table 13-2: Air Noise Impact Criteria (absolute) – residential

Scale Description	Annual dB Lden	Annual dB Lnight
Negligible	<45	<40
Very Low	45 – 49.9	40 – 44.9
Low	50 – 54.9	45 – 49.9
Medium	55 – 64.9	50 – 54.9
High	65 – 69.9	55 – 59.9
Very High	≥70	≥60

Figure 8: Dublin Airport North Runway EIAR Volume 2 – Main Report Table 13-2: Air Noise Impact Criteria (absolute).

Table 13-3: Air Noise Impact Criteria (relative)

Scale Description	Change in noise level, dB(A)
Negligible	0 – 0.9
Very Low	1 – 1-9
Low	2 – 2.9
Medium	3 – 5.9
High	6 – 8.9
Very High	≥9

Figure 9: Dublin Airport North Runway EIAR Volume 2 – Main Report Table 13-3: Air Noise Impact Criteria (relative).

3.2.1 Calculation of $L_{Aeq,16hr}$ Noise Levels from SEL Measurements

Based on the SEL measurements undertaken at the residence in combination with the information submitted by DAA to ANCA as part of the response to ANCA's review of the 2022 airport noise emission outlining the number of flights per aircraft type (included in Appendix B) the $L_{Aeq,16hr}$ noise levels at the residence can be calculated to be compared with the unattended measurement results to confirm validity. The noise level for each aircraft type can be calculated using the following formula and then logarithmically added to predict the daily $L_{Aeq,16hour}$ level as follows:

$$LAeq = L_{AX} - 10*\log_{10}(d1/d2) + 10*\log_{10}(N) - 10*\log_{10}(T)$$

Where:

L_{Ax} measured SEL
N number of vehicle movements
T time (seconds)
d1 distance from the source to the receiver
d2 distance from the source to the measurement

A correction was then applied to the results to account for days of Easterly winds which totalled 12 days over the 92-day duration. Based on the above calculation and the recorded SEL for each aircraft type outlined in Table 2 the predicted $L_{Aeq,16hour}$ during the 92-day summer period in 2023 is 62dB(A).

This shows good agreement with the modal $L_{Aeq,16hour}$ measured over the full 92-day period of 61dB(A) and 3dB above the average $L_{Aeq,16hour}$ of 59dB. Both the predicted $L_{Aeq,16hour}$ calculated from the attended measurements and the measured $L_{Aeq,16hour}$ exceed the DAA predicted 92-day contour map level at the residence which resides significantly outside the 60dBA $L_{Aeq,16hour}$ contour for predicted aircraft noise exposure.

3.3 Comparison of SEL Noise Levels

Sound exposure level (SEL) contours have been predicted by the DAA and their acoustic consultants Bickerdike Allen in relation to the noise abatement departure procedures (NADP) for the North Runway for the most common aircraft types:

- Boeing 737-800
- Airbus A320
- Airbus A330

The predicted SEL contours are shown for the above-referenced aircraft type in Figure 10, Figure 11 and Figure 12 below, respectively.

For the DAA predicted SEL contours for the Boeing 737-800 as shown in Figure 10 below, Breffni Conaty's residence currently lies just inside the 80dB(A) contour. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level ranged from 86 – 88 dB(A) for the Boeing 737-8AS with a logarithmical average SEL of 87dB(A), and 82 – 83 dB(A) for the Boeing 737-8200. This highlights a significant exceedance of the predicted SEL noise levels by up to 8dB(A).

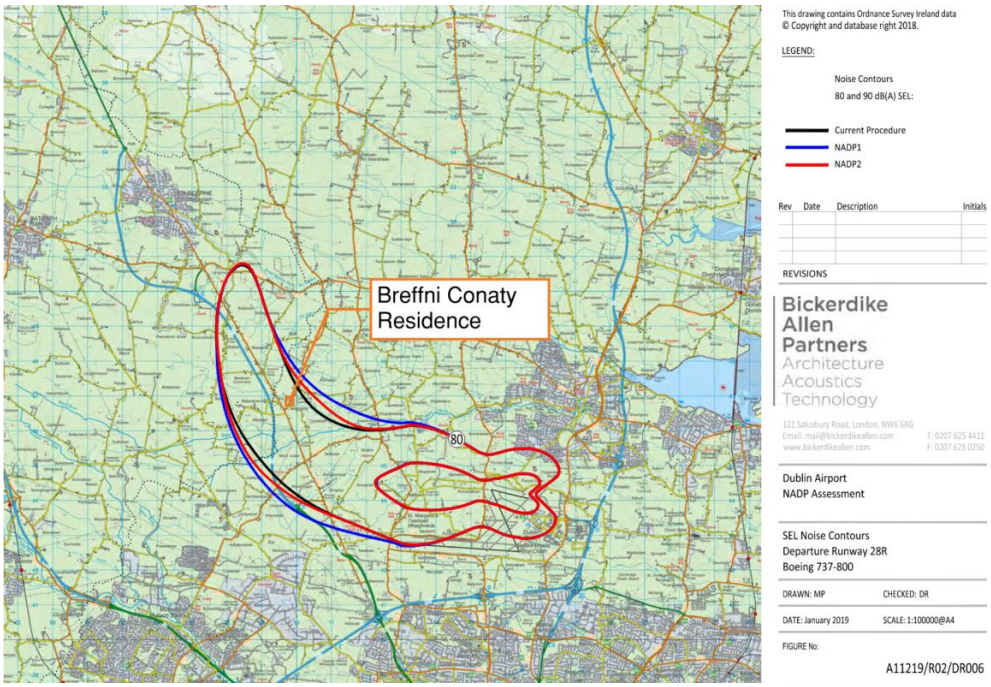


Figure 10: Predicted Sound Exposure Level noise contours for Boeing 737-800 for North Runway operation.

For the DAA predicted SEL contours for the Airbus A320, as shown in Figure 11 below, Breffni Conaty's residence currently lies on the edge of the 80dB(A) contour for all departure procedures. Based on the recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level ranged 80 – 86 dB(A) for the Airbus A320 with a logarithmical average SEL of 85dB(A). This highlights an exceedance of the predicted SEL noise levels by up to 6dB(A).

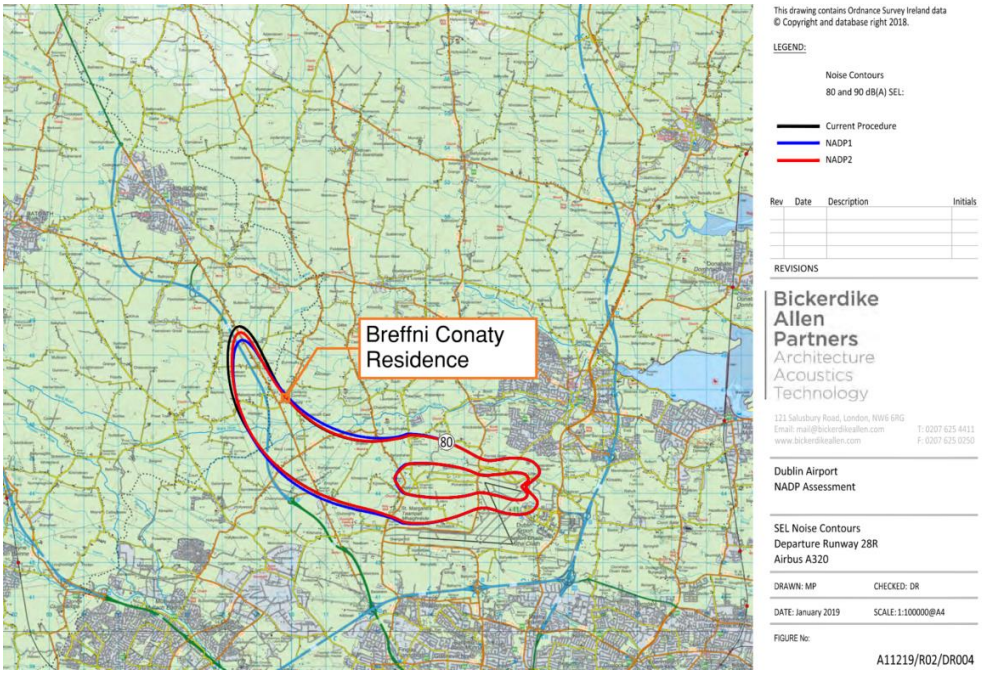


Figure 11: Predicted Sound Exposure Level noise contours for Airbus A320 for North Runway operation.

For the DAA predicted SEL contours for the Airbus A330, as shown in Figure 12 below, Breffni Conaty's residence currently lies between the 80dB(A) and 90dB(A) contour for all departure procedures. Based on the

recorded noise levels at the residence and calculated SELs as outlined in Table 2, the sound exposure level for the Airbus A330 had a SEL of 90dB(A). This highlights an exceedance of the predicted SEL noise levels.

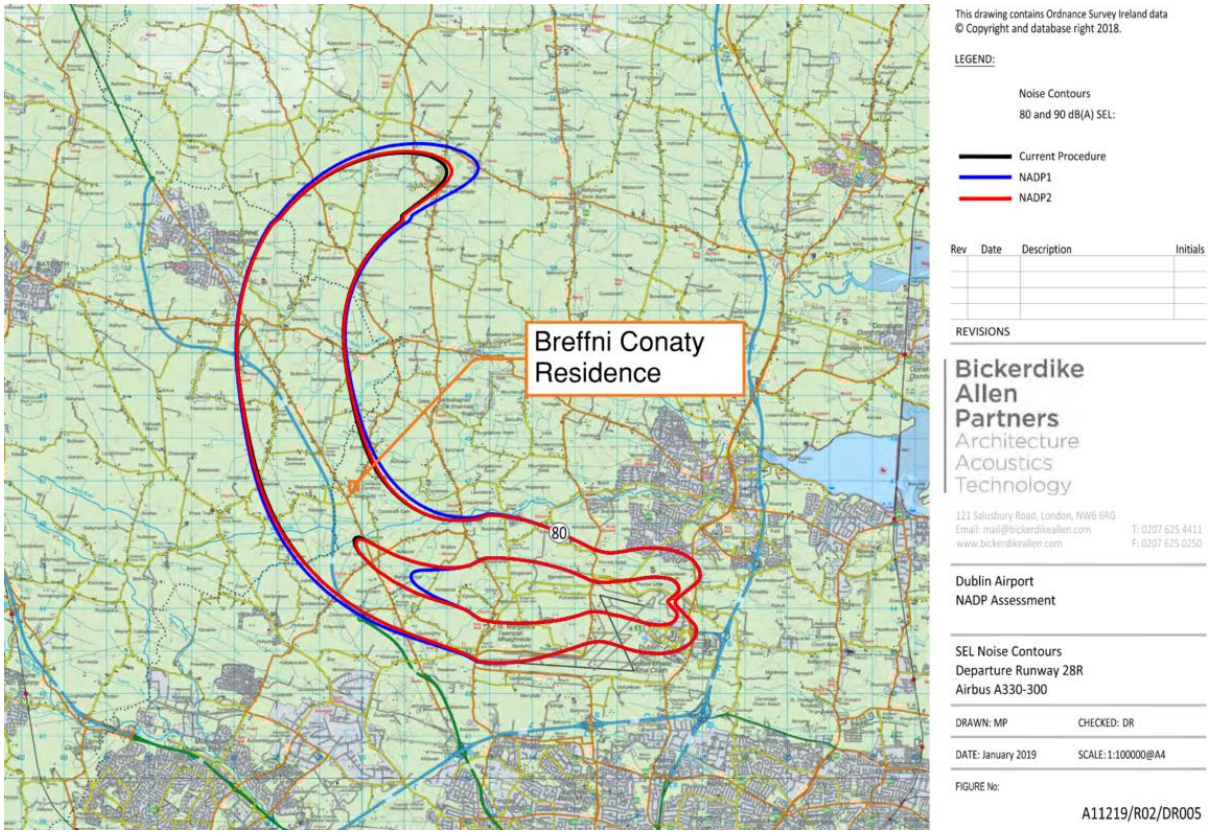


Figure 12: Predicted Sound Exposure Level noise contours for Airbus A330 for North Runway operation .

3.4 L_{Amax} Noise Levels

Based on the unattended measurement results, the $L_{ASmax,1min}$ measurement data has been correlated to the aircraft type for each take-off over the monitoring period. This section outlines a comparison of the DAA predicted L_{Amax} noise levels with the measured L_{ASmax} noise levels recorded at the Breffni Conaty residence for the four most common aircraft types.

- Boeing 737-800
- Boeing 737max
- Airbus A320
- Airbus A330

Boeing 737

Figure 13 below outlines the number of L_{ASmax} occurrences for Boeing 737 aircraft over the full 92-day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Boeing 737-800 are shown further below in Figure 14 which places Breffni Conaty's residence just inside the 70dB contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels shows a significant increase at the residence due to aircraft take-offs. The modal L_{ASmax} value recorded at the residence for Boeing 737 aircraft was 73dB, with 571 occurrences. This is an increase over the DAA predicted maximum noise levels by up to 3dB with many recorded L_{ASmax} values of 74dBA and above.

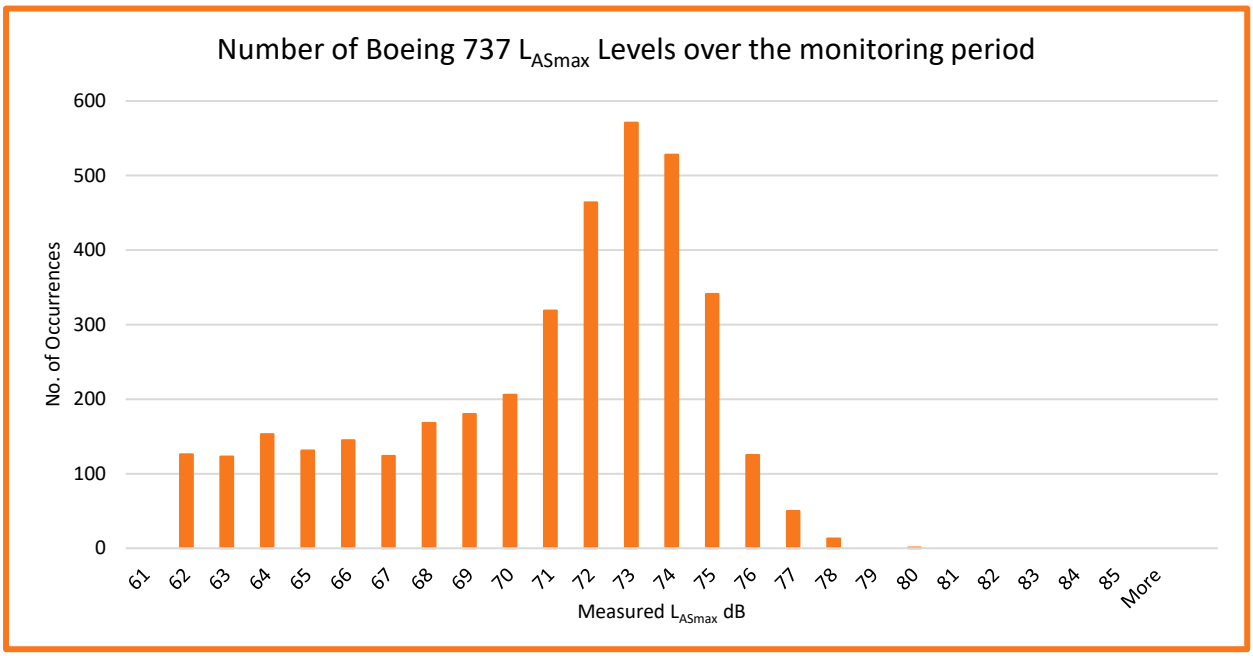


Figure 13: Number of Boeing 737 $L_{ASmax,1min}$ noise levels over the monitoring period.

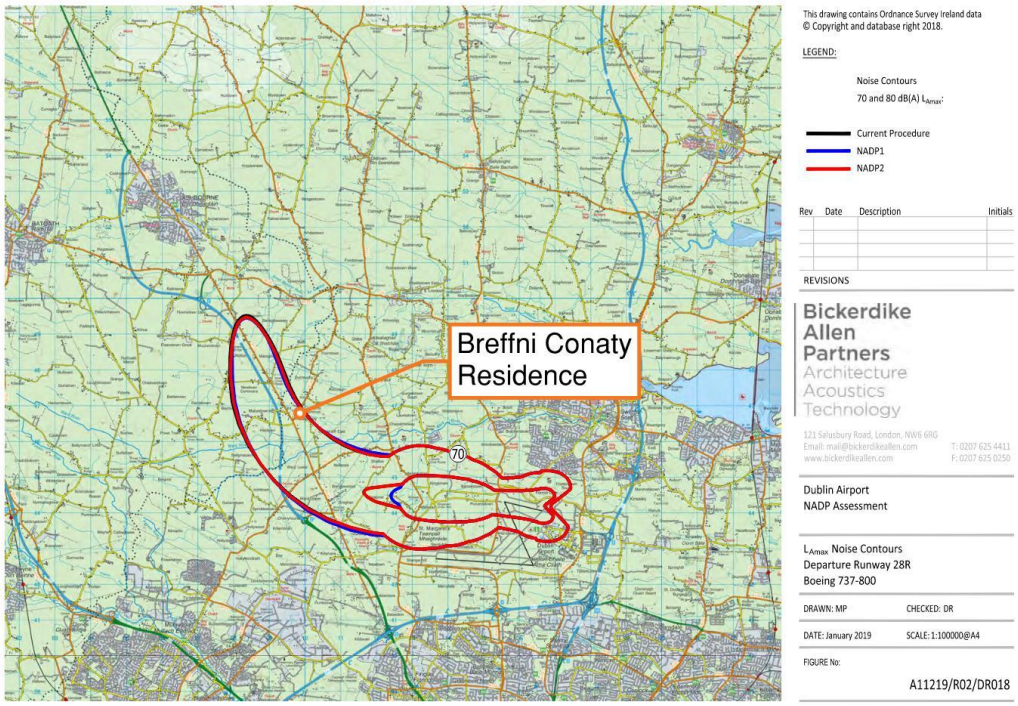


Figure 14: DAA predicted L_{Amax} noise contours for Boeing 737-800.

In addition, the recorded L_{ASmax} noise levels for the Boeing 737-max aircraft have been plotted as shown in Figure 15 below which shows a modal L_{ASmax} of 70dB with 235 occurrences and a number of occurrences above 70dBA.

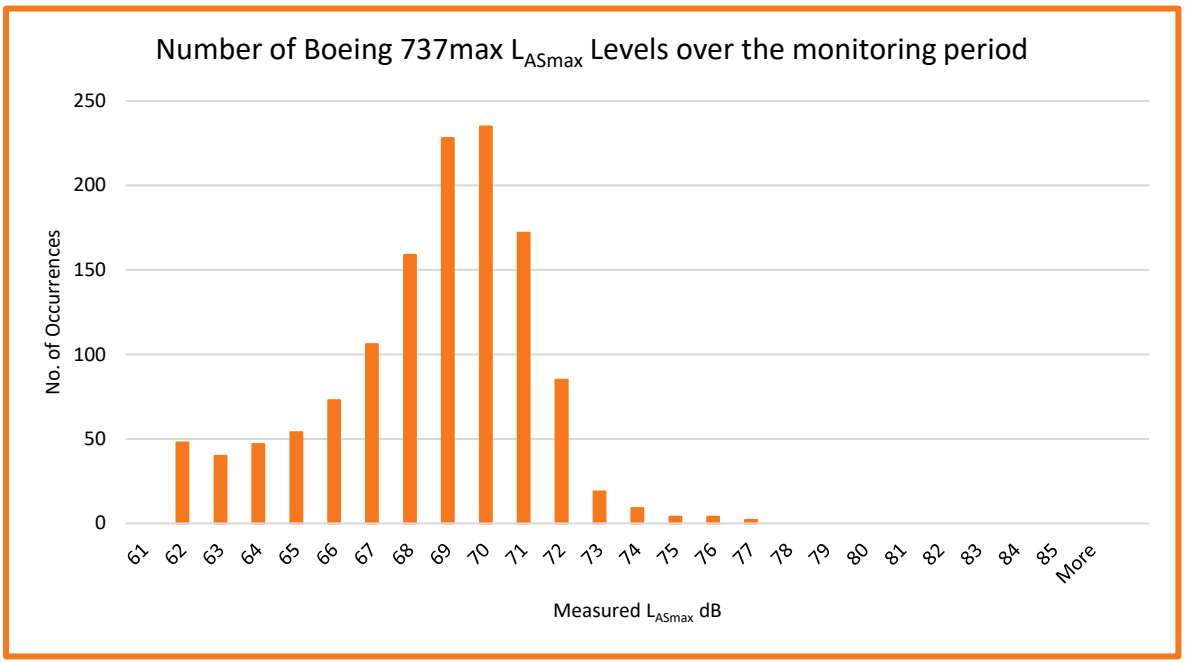


Figure 15: Number of Boeing 737-max $L_{ASmax,1min}$ noise levels over the monitoring period

Airbus A320

Figure 16 below outlines the number of L_{ASmax} occurrences for Airbus A320 aircraft over the full 92-day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Airbus A320 are shown further below in Figure 17 which place Breffni Conaty's residence outside the 70dB contour for the current departure procedure. A comparison of the DAA predicted maximum noise levels with the measured levels show an exceedance at the residence due to aircraft take-offs. The modal L_{ASmax} value recorded at the residence for Airbus A320 aircraft was 72dB, with 586 occurrences. This is an exceedance of the DAA predicted maximum noise levels by a minimum of 2dB. There are also a number of occurrences which exceed 72dB L_{ASmax}.

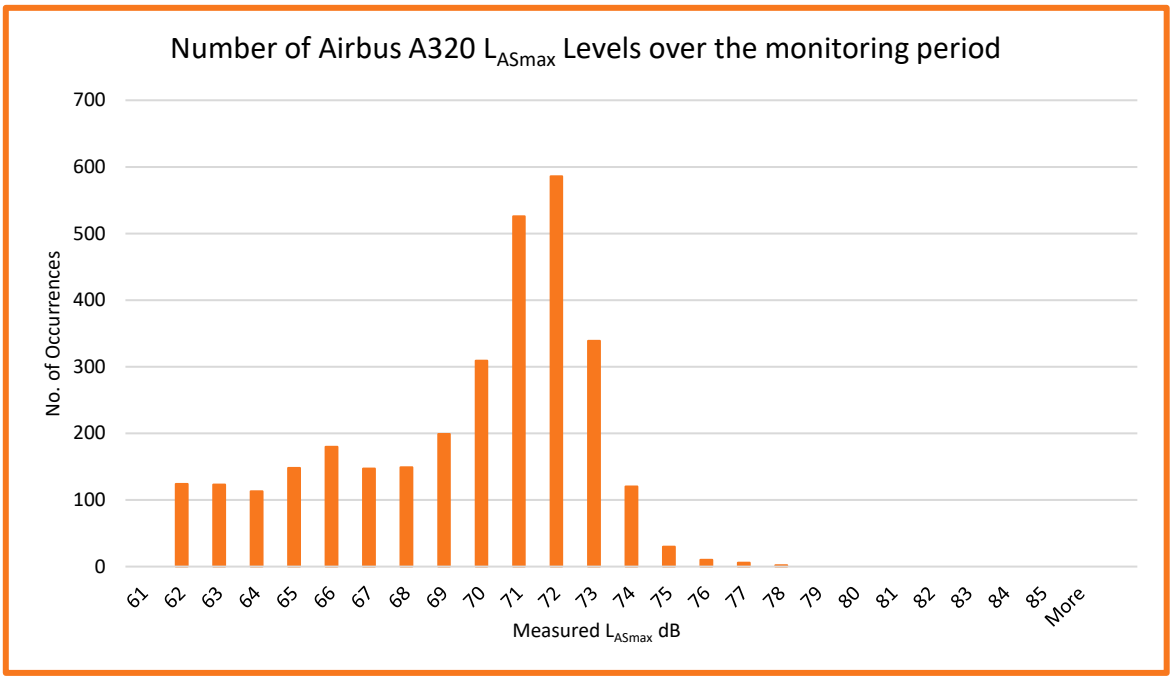


Figure 16: Number of Airbus A320 $L_{ASmax,1min}$ noise levels over the monitoring period

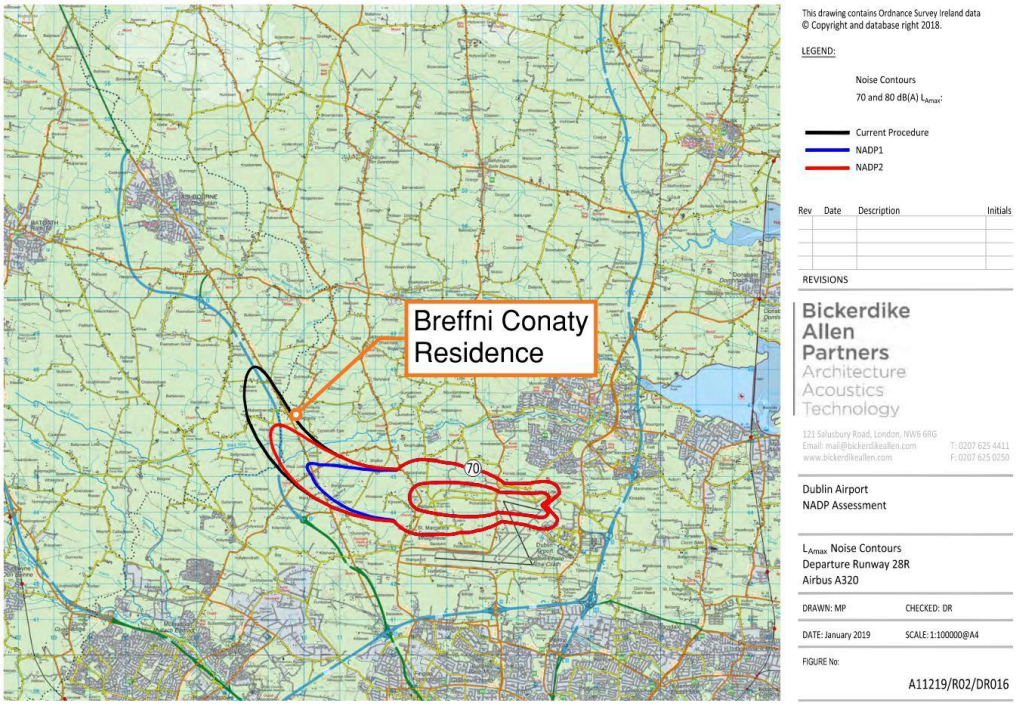


Figure 17: DAA predicted L_{Amax} noise contours for Airbus A320

Airbus A330

Figure 18 below outlines the number of L_{ASmax} occurrences for Airbus A320 aircraft over the full 92-day period at the monitoring location. The DAA predicted L_{Amax} noise levels for the Airbus A320 are shown further below in Figure 19 which place Breffni Conaty's residence just inside the 70dB contour for all departure procedures. A comparison of the DAA predicted maximum noise levels with the measured levels show a significant exceedance at the residence due to aircraft take-offs. The modal L_{ASmax} value recorded at the residence for Airbus A330 aircraft was 77dB, with 95 occurrences. This shows an exceedance of the DAA predicted noise levels by approximately 7dBA.

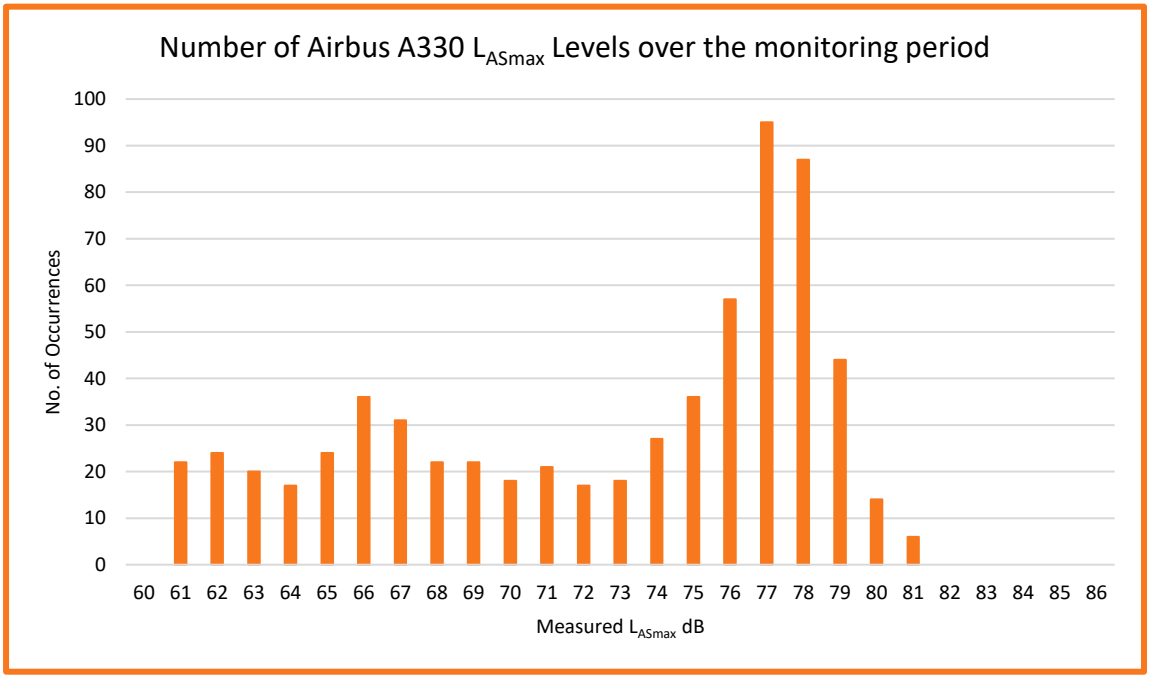


Figure 18: Number of Airbus A330 $L_{ASmax,1min}$ noise levels over the monitoring period

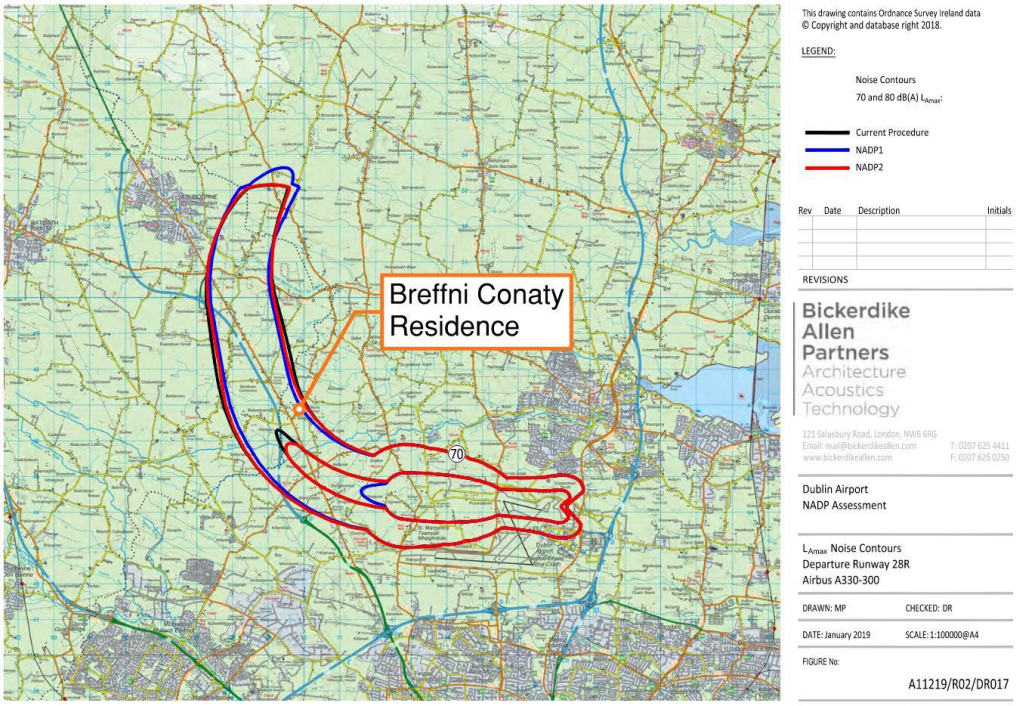


Figure 19: DAA predicted L_{Amax} noise contours for Airbus A330

3.5 External Amenity Spaces

To consider the noise impact of aircraft noise on the residence, the recorded noise levels have been compared to the industry criteria for the external amenity spaces. ProPG 2017 and BS8233:2014 provide the following guidance in relation to external amenity spaces which state that:

> "*the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$".*

Based on the noise monitoring results where the prevailing wind was easterly and therefore aircraft were taking off to the east from the South Runway, it can be determined that the $L_{Aeq,16hour}$ noise levels at the residence were typically in the range of 46 – 50dB(A). This is in line with the ProPG 2017 and BS8233 criteria for external amenity noise levels. The noise levels recorded during days of easterly winds indicate that the noise levels at the residence are so low such that the higher noise levels caused by aircraft take offs during westerly winds are not affected by any other non-aircraft noise sources.

As outlined in Section 3.1, the average daytime noise levels at the residence rose to 59dB(A) when averaged over the full 92-day period and had a modal value of 61dB(A). This is an increase of approximately 9-13dB due to North Runway operations and is an exceedance of the industry criteria for external amenity noise levels based on the measured noise levels without aircraft.

4 Conclusion

Following the commencement of operations of the new Dublin Airport North Runway, Wave Dynamics were engaged by Breffni Conaty to review the 92-day unattended noise monitoring results and undertake sound exposure level measurements at Coolquay Common, The Ward, Dublin, D11 PD87.

The objective of the assessment was to quantify the existing noise environment and the current noise levels from aircraft noise following the commencement of the operation of the North Runway. The measured noise levels have been compared with the predicted noise levels from the DAA noise contours and industry criteria.

Based on the results of the unattended noise monitoring at the residence, a 92-day average $L_{Aeq,16hour}$ of 59 dB(A) was recorded which suggests an exceedance of the DAA predicted contour maps which place the residence significantly outside the 60dBA contour.

Sound exposure level measurements have also been taken at the residence and thus used to calculate the 92-day average $L_{Aeq,16hour}$ based on the number of aircraft types over the 92-day period which predicted an $L_{Aeq,16hour}$ of 62 dB(A).

Both the predicted $L_{Aeq,16hour}$ calculated from the attended measurements and the measured $L_{Aeq,16hour}$ exceed the DAA predicted 92-day contour map level at the residence which is situated significantly outside the 60dBA contour for aircraft noise exposure. In addition these have been compared to the DAA 2025 predicted noise contours which are 57-59dBA at the dwelling.

The DAA predicted L_{night} contours have been compared to the existing nighttime noise levels at the dwelling. Based on the *Dublin Airport North Runway EIAR Volume 2 – Main Report* it is likely that commencement of night time flights will have a “Very Significant” impact on the noise levels at the residence.

Sound exposure level measurements for the three most common aircraft types were also compared to the DAA predicted noise contours for the same aircraft types which showed exceedances for all three aircraft types of up to 8dB(A).

L_{ASmax} values over the full 92-day monitoring period for the three most common aircraft types were compared to the DAA-predicted noise contours for the same aircraft types. All three aircraft types showed exceedances over the predicted maximum noise levels with the worst case aircraft having a modal L_{ASmax} value of 7dBA in excess of the predicted noise levels.

Appendix A- Glossary of Terms

dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μPa).
dB(A)	An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'–weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Hertz	The unit of sound frequency in cycles per second.
L_{A90}	A-weighted, sound level just exceeded for 90% of the measurement period and calculated by statistical analysis. See also the background noise level.
L_{Aeq}	A-weighted, equivalent continuous sound level.
L_{AFmax}	A-weighted, maximum, sound level measured with a fast time-constant - maximum is not peak

Appendix B – Volume of Flights per Aircraft Type

The volume of flights per aircraft type have been submitted to DAA by ANCA and are outlined below in Table 3.

Table 3: Volume of each aircraft type over the entire year and over summer period

Aircraft Type	2023						
	Annual Average				Summers Period		
	Annual Day	Annual Eve	Annual Night	Annual 24hr	Summer Day 16hr	Summer Night	Summer 24hr
Airbus A300	0	0	0	0	0	0	0
Airbus A306	595	298	298	1190	262	87	350
Airbus A319	2083	0	0	2083	612	0	612
Airbus A320	38379	10115	4165	52659	14246	1224	15470
Airbus A320neo	3273	1488	298	5058	1398	87	1486
Airbus A321	1785	893	595	3273	787	175	961
Airbus A321neo	5355	0	595	5950	1573	175	1748
Airbus A330	8628	0	893	9520	2535	262	2797
Airbus A330neo	0	0	0	0	0	0	0
Airbus A350	0	0	0	0	0	0	0
ATR 42	0	0	0	0	0	0	0
ATR 72	9223	2083	0	11305	3321	0	3321
BAe 146/Avro RJ	0	0	0	0	0	0	0
Boeing 737-400	595	1190	595	2380	524	175	699
Boeing 737-500	0	0	0	0	0	0	0
Boeing 737-700	0	0	0	0	0	0	0
Boeing 737-800	38974	10710	4463	54147	14596	1311	15907
Boeing 737 MAX	17553	6545	2975	27073	7079	874	7953
Boeing 757	2380	298	298	2975	787	87	874
Boeing 767	1190	1190	595	2975	699	175	874
Boeing 777	1190	0	595	1785	350	175	524
Boeing 777X	0	0	0	0	0	0	0
Boeing 787	3570	0	595	4165	1049	175	1224
Bombardier CS300	1190	595	0	1785	524	0	524
Bombardier Dash 8	595	0	0	595	175	0	175
Convair 580	0	0	0	0	0	0	0
Embraer E190/195	4165	1785	298	6248	1748	87	1835
Embraer E190-E2	595	0	0	595	175	0	175
HS748A	0	0	0	0	0	0	0
Lockheed C130	0	0	0	0	0	0	0
McDonnell Douglas	0	0	0	0	0	0	0
MD83	0	0	0	0	0	0	0
Piper PA34	0	0	0	0	0	0	0
Shorts SD330/360	0	0	0	0	0	0	0

Aircraft Type	2023						
	Annual Average				Summers Period		
	Annual Day	Annual Eve	Annual Night	Annual 24hr	Summer Day 16hr	Summer Night	Summer 24hr
Other	1488	298	0	1785	524	0	524
Total	**142804**	**37486**	**17255**	**197546**	**52964**	**5069**	**58034**

Appendix C - Unattended Noise Monitoring Results

Table 4 below outlines the noise levels recorded at location L1 over the period 14th of June 2023 to 17th of September 2023. The results are averaged over the following periods:

- $L_{Aeq,16hour}$ 07:00 – 23:00
- $L_{Aeq,8hour}$ 23:00 – 07:00

Table 4: Unattended Measurement Results

Date	Start Time	End Time	Average $L^{Aeq,T}$
14/06/2023	07:00	23:00	50
14/06/2023	23:00	07:00	47
15/06/2023	07:00	23:00	46
15/06/2023	23:00	07:00	46
16/06/2023	07:00	23:00	49
16/06/2023	23:00	07:00	47
17/06/2023	07:00	23:00	50
17/06/2023	23:00	07:00	39
18/06/2023	07:00	23:00	48
18/06/2023	23:00	07:00	45
19/06/2023	07:00	23:00	58
19/06/2023	23:00	07:00	44
20/06/2023	07:00	23:00	54
20/06/2023	23:00	07:00	46
21/06/2023	07:00	23:00	58
21/06/2023	23:00	07:00	42
22/06/2023	07:00	23:00	47
22/06/2023	23:00	07:00	45
23/06/2023	07:00	23:00	59
23/06/2023	23:00	07:00	44
24/06/2023	07:00	23:00	58
24/06/2023	23:00	07:00	43
25/06/2023	07:00	23:00	59
25/06/2023	23:00	07:00	46
26/06/2023	07:00	23:00	59
26/06/2023	23:00	07:00	46
27/06/2023	07:00	23:00	59
27/06/2023	23:00	07:00	44
28/06/2023	07:00	23:00	59
28/06/2023	23:00	07:00	46
29/06/2023	07:00	23:00	59
29/06/2023	23:00	07:00	45
30/06/2023	07:00	23:00	58
30/06/2023	23:00	07:00	45
01/07/2023	07:00	23:00	59
01/07/2023	23:00	07:00	44
02/07/2023	07:00	23:00	59
02/07/2023	23:00	07:00	46
03/07/2023	07:00	23:00	59
03/07/2023	23:00	07:00	47
04/07/2023	07:00	23:00	61

Date	Start Time	End Time	Average $L^{Aeq,T}$
04/07/2023	23:00	07:00	46
05/07/2023	07:00	23:00	61
05/07/2023	23:00	07:00	45
06/07/2023	07:00	23:00	58
06/07/2023	23:00	07:00	47
07/07/2023	07:00	23:00	51
07/07/2023	23:00	07:00	43
08/07/2023	07:00	23:00	59
08/07/2023	23:00	07:00	44
09/07/2023	07:00	23:00	59
09/07/2023	23:00	07:00	43
10/07/2023	07:00	23:00	48
10/07/2023	23:00	07:00	-
11/07/2023	07:00	23:00	59
11/07/2023	23:00	07:00	48
12/07/2023	07:00	23:00	60
12/07/2023	23:00	07:00	46
13/07/2023	07:00	23:00	61
13/07/2023	23:00	07:00	44
14/07/2023	07:00	23:00	54
14/07/2023	23:00	07:00	46
15/07/2023	07:00	23:00	60
15/07/2023	23:00	07:00	45
16/07/2023	07:00	23:00	61
16/07/2023	23:00	07:00	45
17/07/2023	07:00	23:00	61
17/07/2023	23:00	07:00	42
18/07/2023	07:00	23:00	56
18/07/2023	23:00	07:00	43
19/07/2023	07:00	23:00	61
19/07/2023	23:00	07:00	45
20/07/2023	07:00	23:00	61
20/07/2023	23:00	07:00	49
21/07/2023	07:00	23:00	61
21/07/2023	23:00	07:00	46
22/07/2023	07:00	23:00	61
22/07/2023	23:00	07:00	43
23/07/2023	07:00	23:00	56
23/07/2023	23:00	07:00	40
24/07/2023	07:00	23:00	61
24/07/2023	23:00	07:00	46
25/07/2023	07:00	23:00	61
25/07/2023	23:00	07:00	47
26/07/2023	07:00	23:00	58
26/07/2023	23:00	07:00	46
27/07/2023	07:00	23:00	60
27/07/2023	23:00	07:00	45
28/07/2023	07:00	23:00	61
28/07/2023	23:00	07:00	45
29/07/2023	07:00	23:00	60
29/07/2023	23:00	07:00	44
30/07/2023	07:00	23:00	61

Date	Start Time	End Time	Average $L^{Aeq,T}$
30/07/2023	23:00	07:00	45
31/07/2023	07:00	23:00	60
31/07/2023	23:00	07:00	46
01/08/2023	07:00	23:00	60
01/08/2023	23:00	07:00	44
02/08/2023	07:00	23:00	59
02/08/2023	23:00	07:00	43
03/08/2023	07:00	23:00	61
03/08/2023	23:00	07:00	45
04/08/2023	07:00	23:00	61
04/08/2023	23:00	07:00	51
05/08/2023	07:00	23:00	60
05/08/2023	23:00	07:00	44
06/08/2023	07:00	23:00	61
06/08/2023	23:00	07:00	45
07/08/2023	07:00	23:00	61
07/08/2023	23:00	07:00	42
08/08/2023	07:00	23:00	61
08/08/2023	23:00	07:00	46
09/08/2023	07:00	23:00	60
09/08/2023	23:00	07:00	43
10/08/2023	07:00	23:00	49
10/08/2023	23:00	07:00	46
11/08/2023	07:00	23:00	61
11/08/2023	23:00	07:00	46
12/08/2023	07:00	23:00	60
12/08/2023	23:00	07:00	43
13/08/2023	07:00	23:00	61
13/08/2023	23:00	07:00	43
14/08/2023	07:00	23:00	61
14/08/2023	23:00	07:00	41
15/08/2023	07:00	23:00	60
15/08/2023	23:00	07:00	44
16/08/2023	07:00	23:00	58
16/08/2023	23:00	07:00	41
17/08/2023	07:00	23:00	50
17/08/2023	23:00	07:00	41
18/08/2023	07:00	23:00	53
18/08/2023	23:00	07:00	53
19/08/2023	07:00	23:00	61
19/08/2023	23:00	07:00	43
20/08/2023	07:00	23:00	61
20/08/2023	23:00	07:00	45
21/08/2023	07:00	23:00	60
21/08/2023	23:00	07:00	46
22/08/2023	07:00	23:00	61
22/08/2023	23:00	07:00	47
23/08/2023	07:00	23:00	61
23/08/2023	23:00	07:00	46
24/08/2023	07:00	23:00	60
24/08/2023	23:00	07:00	45
25/08/2023	07:00	23:00	61

Date	Start Time	End Time	Average $L^{Aeq,T}$
25/08/2023	23:00	07:00	44
26/08/2023	07:00	23:00	61
26/08/2023	23:00	07:00	42
27/08/2023	07:00	23:00	61
27/08/2023	23:00	07:00	45
28/08/2023	07:00	23:00	60
28/08/2023	23:00	07:00	45
29/08/2023	07:00	23:00	60
29/08/2023	23:00	07:00	46
30/08/2023	07:00	23:00	61
30/08/2023	23:00	07:00	43
31/08/2023	07:00	23:00	57
31/08/2023	23:00	07:00	45
01/09/2023	07:00	23:00	61
01/09/2023	23:00	07:00	39
02/09/2023	07:00	23:00	60
02/09/2023	23:00	07:00	45
03/09/2023	07:00	23:00	60
03/09/2023	23:00	07:00	45
04/09/2023	07:00	23:00	58
04/09/2023	23:00	07:00	42
05/09/2023	07:00	23:00	50
05/09/2023	23:00	07:00	47
06/09/2023	07:00	23:00	58
06/09/2023	23:00	07:00	48
07/09/2023	07:00	23:00	58
07/09/2023	23:00	07:00	44
08/09/2023	07:00	23:00	56
08/09/2023	23:00	07:00	46
09/09/2023	07:00	23:00	60
09/09/2023	23:00	07:00	43
10/09/2023	07:00	23:00	60
10/09/2023	23:00	07:00	45
11/09/2023	07:00	23:00	57
11/09/2023	23:00	07:00	45
12/09/2023	07:00	23:00	61
12/09/2023	23:00	07:00	48
13/09/2023	07:00	23:00	61
13/09/2023	23:00	07:00	48
14/09/2023	07:00	23:00	61
14/09/2023	23:00	07:00	43
15/09/2023	07:00	23:00	62
15/09/2023	23:00	07:00	44
16/09/2023	07:00	23:00	60
16/09/2023	23:00	07:00	39
17/09/2023	07:00	23:00	61

APPENDIX 4

Health related report by Dr John Garvey responding to the RFI and supplementary EIAR

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REPORT

Re: Noise effects on health and sleep in the context of proposed amendments to planning conditions for the North Runway at Dublin Airport

An Bord Pleanála Case Number: ABP-314485-22
Fingal Ref Number: F20A/0668

Date of report: 22/11/2023

Summary of my relevant experience

I completed medical school at the National University of Ireland, Galway in 2002 and was awarded a PhD from University College Dublin, Ireland in 2011 for a thesis entitled ""Mechanisms involved in the induction and modulation of inflammatory pathways by intermittent hypoxia and obstructive sleep apnoea." I was awarded my Certificate of Satisfactory Completion of Specialist Training by the Irish Committee on Higher Medical Training (Respiratory and General Internal Medicine) in 2013. I completed my post-graduate training at the Austin Hospital, Melbourne, Australia which included specific training in the management of non-respiratory sleep disorders. Prior to taking up my current post with St. Vincent's Hospital Group, I was a member of the Faculty of Medicine (Division of Respiratory and Critical Care Medicine) at Queen's University and Director of the Sleep Laboratory at Kingston General Hospital, Kingston, Ontario, Canada.

I manage 50-60 patients per week with sleep disorders in outpatient clinics and I am the director of the largest sleep service in the Republic of Ireland. I am a former secretary of the Irish Sleep Society and a member of the American Academy of Sleep Medicine. I have extensive experience in the area of sleep medicine and sleep physiology. I am not an expert on aircraft noise or the aviation industry.

Information that forms the basis for this report

This report is based upon:

1. Documents available from An Bord Pleanála website under case file number 314485-22 including cover letter from Tom Philips and Associates Ltd to An Bord Pleanála dated 14th Sept 2023, Environmental Impact Assessment Report (EIAR), Noise Modelling Report by Bickerdike Allen Partners and report from Dr. Thomas Penzel.
2. Information provided by Dublin Airport about the North Runway on its website (accessed 19/11/2023): www.dublinairport.com/corporate/north-runway/about/frequently-asked-questions

Background

Planning permission for the North Runway at Dublin Airport includes 31 conditions. The Dublin Airport Authority (DAA) have submitted a planning application to Fingal County Council seeking to amend and replace two of these conditions; condition 3(d) which states that North Runway cannot be used for landings or take-offs between 11pm and 7am, and Condition 5 which places a 65 movement cap right across the airfield, within the same 11pm to 7am period.

This planning application proposes to:

- only use North Runway from 6am to midnight, rather than 7am to 11pm as set out in the current planning conditions
- introduce a Noise Quota Count system from 11.30pm to 6am, rather than an airport-wide 65 movement cap from 11pm to 7am
- introduce a noise insulation grant scheme for those most impacted by the proposed amendments
- introduce an enhanced noise monitoring framework.

An Bord Pleanála has issued a Request for Further Information (RFI) regarding the application and Tom Philips and Associates have prepared a response to the request which I have reviewed.

Item 1 of the RFI refers to "Impact of Peak L_{Amax} Noise Levels from Air Traffic Movements (ATMs) on sleep" and I will focus my professional opinion which follows on this item in particular in discussing the impact of noise on health and sleep.

Statement of opinion

1. Sleep is a complex physiological process characterized by a natural state of reduced consciousness and sensory activity. It is a dynamic and highly regulated state involving different stages, each serving specific functions. The primary purposes of sleep include physical restoration, cognitive consolidation, and emotional processing. During sleep, the body undergoes repair and maintenance, while the brain consolidates memories and processes emotions, contributing to overall health and functioning.

   Adequate duration, appropriate timing, good quality, regularity, and the absence of disturbances and disorders are crucial elements of healthy sleep. Recognizing and safeguarding these aspects is essential for promoting public health and well-being. Sleep disruption and inadequate sleep have far-reaching consequences on both physical and mental health.

   The recommended duration of sleep for both adults and children plays a crucial role in overall health and well-being. For adults, most health organizations, including the National Sleep Foundation, recommend 7-9 hours of sleep per night. Adequate sleep in adults is associated with improved cognitive function, emotional well-being, and a lower risk of chronic conditions such as obesity and cardiovascular diseases. On the other hand, children require more sleep than adults due to their rapid growth and development. The American Academy of Sleep Medicine suggests that preschoolers (3-5 years old) should aim for 10-13 hours, school-age children (6-12 years old) should get 9-12 hours, and teenagers (13-18 years old) should aim for 8-10 hours. Sufficient sleep is essential for children's physical and mental development, as well as their academic performance.

2. Research consistently underscores the association between insufficient sleep and an elevated risk of chronic conditions, particularly diabetes, cardiovascular diseases, and obesity. The intricate interplay between sleep and metabolic health has been extensively investigated, revealing a complex web of physiological processes that are intricately linked.

   One of the most significant relationships is observed between sleep deprivation and diabetes.[i] Sleep plays a crucial role in regulating glucose metabolism, and insufficient sleep can lead to insulin resistance, impaired glucose tolerance, and ultimately an increased risk of developing type 2 diabetes. The mechanisms underlying this connection involve disruptions in hormonal

regulation, specifically elevated cortisol levels and decreased insulin sensitivity, which contribute to dysregulated glucose homeostasis.

Cardiovascular diseases also feature prominently in the spectrum of health risks associated with inadequate sleep.[ii] Chronic sleep deprivation has been linked to elevated blood pressure, increased inflammation, and irregularities in heart rate variability. These factors collectively contribute to the development and progression of cardiovascular conditions, including hypertension, atherosclerosis, and an elevated risk of heart attacks and strokes. The intricate balance of cardiovascular health is perturbed when the body is deprived of the essential restoration and maintenance functions facilitated by sleep.

Furthermore, sleep deprivation is strongly correlated with obesity, forming a bidirectional relationship.[iii] On one hand, sleep restriction can disrupt the balance of appetite-regulating hormones, leading to increased feelings of hunger and a preference for high-calorie, carbohydrate-rich foods. On the other hand, obesity itself can contribute to sleep disorders, such as sleep apnoea, further exacerbating the cycle of insufficient sleep and metabolic dysregulation.

3. Sleep deprivation has been extensively linked to an elevated risk of mental health disorders.[iv]. The intricate relationship between sleep and mental well-being underscores the critical role of adequate sleep in maintaining cognitive and emotional equilibrium.

   Research consistently demonstrates that insufficient sleep, whether chronic or acute, can adversely impact mood regulation, cognitive function, and overall psychological resilience. The intricate interplay between sleep and mental health is underscored by evidence suggesting that sleep deprivation can exacerbate existing psychiatric conditions and contribute to the onset of new ones. Conditions such as depression, anxiety, and bipolar disorder have been closely associated with disrupted sleep patterns. The bidirectional nature of this association further complicates the issue, as mental health disorders themselves can contribute to sleep disturbances, creating a cycle of reciprocal influence.

   Neurobiologically, sleep is crucial for various cognitive processes, including memory consolidation, emotional regulation, and executive functions. Depriving the brain of adequate rest impairs these functions, potentially leading to heightened emotional reactivity, decreased impulse control, and impaired decision-making. Furthermore, alterations in neurotransmitter

systems, particularly those involving serotonin and dopamine, have been observed in response to sleep deprivation, contributing to the manifestation and perpetuation of mental health challenges.

4. Repeated sleep disruption can significantly contribute to the development of chronic sleep disorders, particularly insomnia. Insomnia, characterized by difficulty falling asleep, staying asleep, or dissatisfaction with awakening too early in the morning, often emerges as a consequence of persistent sleep disruptions. When the natural sleep-wake cycle is consistently interrupted, it disrupts the body's circadian rhythm and impairs the ability to achieve and maintain restorative sleep.

   The association between repeated sleep disruption and chronic insomnia is complex and bidirectional. On one hand, chronic insomnia itself can perpetuate a cycle of sleep disruption, as the anxiety and frustration associated with persistent sleep difficulties may lead to heightened arousal and hyperarousal, making it even more challenging to fall and stay asleep. On the other hand, external factors such as work-related stress, lifestyle choices, or environmental disturbances can initiate the cycle of sleep disruption, ultimately contributing to the development and perpetuation of chronic insomnia.

5. Repeated sleep disruption can have profound psychosocial complications that extend beyond the realm of mere physical fatigue. The persistent lack of quality sleep often leads to heightened levels of stress, irritability, and difficulty concentrating, which can impede professional performance and interpersonal relationships. Moreover, the cumulative effects of sleep disruption may contribute to the development or exacerbation of mood disorders, such as anxiety and depression, as outlined above. Individuals experiencing chronic sleep disturbances often report diminished quality of life, increased absenteeism, and impaired decision-making skills. The interplay between disrupted sleep and its psychosocial complications can thus lead to reduced individual well-being and workplace productivity.

6. In 2011, the World Health Organization (WHO) attributed 903,000 disability-adjusted life years lost annually in Western Europe to environmental noise, with the majority of this due to noise-induced sleep disturbance.[v]

   The International Classification of Sleep Disorders (ICSD 3rd edition; American Academy of Sleep Medicine) also recognises the impact of environmentally induced sleep disturbance under

the section on OTHER SLEEP DISORDER ICD-10-CM code: G47.8. It states: "*the International Classification of sleep disorders, 2nd edition included a specific diagnosis of environmental sleep disorder within this section. This diagnosis is infrequently employed in the clinical setting and significant controversy exists regarding whether environmentally induced sleep disturbance represents a clinical disorder per se. The condition is typically characterised by complaints of sleep initiation and/or maintenance that are the direct result of an environmental factor. Associated daytime symptoms such as sleepiness, fatigue, or cognitive or emotional disturbance may be present."* The environmental disturbance *"may be a physical stimulus such as noise (e.g., vehicular traffic, aircraft…"*

L_{night} is the night-time noise indicator and is used in the assessment of sleep disturbance. The WHO have published recommendations for protecting human health from exposure to environmental noise.[vi] These guidelines included strong recommendations for target night-time noise levels to mitigate adverse effects of traffic noise on sleep, which included levels less than 40 dB L_{night} for air traffic. An interim target of 55 dB L_{night} is recommended in the situations where the achievement of night noise guidelines is not feasible in the short run and this has been utilised in the Dublin Agglomeration Environmental Noise Action Plan and Noise Action Plan for Dublin Airport; this interim target is not a health-based limit value by itself and allows a continued risk of negative health effects.[vii] In reality a Boeing 747 on take-off with a distance of 10 km from the runway, 600 m height, one movement per 8 hours would lead to an L_{Night} of 51 dB(A), or for an Airbus 320, 10 km distance from the runway on take-off, 770 m height, eight movements per 8 hours would lead to an L_{Night} of 50 dB(A).[viii]

Table 1: Effects of different levels of night noise on the population's health

Average night noise level over a year, L_{night}, outside at the façade	Health effects observed in the population
Up to 30 dB	Although individual sensitivities and circumstances may differ, it appears that up to this level no substantial biological effects are observed. L_{night} of 30 dB is equivalent to the no observed effect level (NOEL) for night noise.
30 to 40 dB	A number of effects on sleep are observed from this range: body movements, awakening, self-reported sleep disturbance, arousals. The intensity of the effect depends on the nature of the source and the number of events. Vulnerable groups (for example children, the chronically ill and the elderly) are more susceptible. However, even in the worst cases the effects seem modest. L_{night} of 40 dB is equivalent to the lowest observed adverse effect level (LOAEL) for night noise.
40 to 55 dB	Adverse health effects are observed among the exposed population. Many people have to adapt their lives to cope with the noise at night. Vulnerable groups are more severely affected.
Above 55 dB	The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is highly annoyed and sleep-disturbed. There is evidence that the risk of cardiovascular disease increases.

Table 1. (From Summary of night noise guidelines for Europe. Kim R, Berg Mv. Noise Health. 2010 Apr-Jun;12(47):61-3.)

The WHO recommendations were primarily derived from a systematic review and meta-analysis encompassing studies published only until 2015. An updated systematic review and meta-analysis to encompass studies published up to 2021 has been published with estimates indicating a higher probability of experiencing high sleep disturbance at elevated L_{night} levels.[v]

While average noise measures provide a general understanding of the soundscape, single noise events can have pronounced effects on sleep quality and overall well-being. Flights, characterized by their intermittent and often unpredictable nature, can disrupt sleep patterns, causing awakenings or alterations in sleep stages. Unlike continuous background noise, which can be habituated to over time, single noise events can evoke a more immediate and profound impact on sleep architecture. In determining the extent of sleep disruption the decibel levels (maximum sound pressure level L_{ASmax}) as well as the temporal characteristics of such events, including their frequency and duration should be considered. Additionally, factors such as the time of occurrence, proximity to residential areas, and individual susceptibility play crucial roles.

7. Stress responses can manifest independently of cortical structures, suggesting that cognitive perception of noise is not a prerequisite for its detrimental effects; in simple terms, humans do not need to be fully awoken by noise for it to have negative health effects.[ix] Noise can directly impact neuroendocrine haemostasis through synaptic interactions or indirectly through emotional and cognitive sound processing. Consequently, the joint influence of objective noise exposure (sound level) and its perception determines the impact on neuroendocrine haemostasis and, subsequently, the extent of the stress reaction. Various studies have demonstrated autonomic responses triggered by exposure to traffic noise during sleep, such as disruptions in the typical cortisol reaction upon awakening[x] and an increased occurrence of nocturnal heart rate accelerations.[xi] These findings collectively suggest the presence of a neurological and endocrine response to noise that operates below the threshold of consciousness, potentially compromising the effectiveness of sleep.

8. The health concerns outlined above have been acknowledged and addressed in current European policy. Annex III of the Environmental Noise Directive (END), referring to the provision of dose-effect relations for the assessment of harmful effects caused by environmental noise, has been amended with the ratification of Commission Directive (EU) 2020/367. It describes how harmful effects from environmental noise may be calculated for ischemic heart disease (IHD), high annoyance (HA), and high sleep disturbance (HSD) for road, rail, and aircraft noise for EU Member States.

The WHO ENG Guidelines in 2018 identify cardiovascular disease as a “critical health outcome” with HA and HSD. Directive 2020/367 also acknowledges the link between aircraft noise and IHD but stated quantification of the increased risk of IHD is premature.

More recent data however exist suggesting that night-time aircraft noise can trigger acute cardiovascular mortality; specifically, aircraft noise events during the night may trigger a cardiovascular event (including heart attack, stroke, heart failure, cardiac arrhythmia) within 2 hours.[xii] It should be noted that this increased cardiovascular risk was evident at exposures of 40-50db (see table 2 below) and a particular strength of the study was the high precision aircraft noise modelling accounting for single, specific flight events, yielding individual aircraft noise exposure estimates with high spatial and temporal accuracy for each death case.

Table 2 **Associations between night-time mortality from cardiovascular cause and noise exposure groups 2 h preceding death (2h-L_{Aeq})**

Exposure groups	All cardiovascular diseases			Ischaemic heart diseases			Myocardial infarction			Heart failure		
	n	OR	95% CI	*n*	OR	95% CI	*n*	OR	95% CI	*n*	OR	95% CI
<20 dB	4245	1		1797	1		527	1		229	1	
20–30 dB	824	1.08	(0.92–1.26)	360	1.15	(0.90–1.47)	101	1.11	(0.67–1.79)	69	1.11	(0.63–1.99)
30–40 dB	1169	1.23	(1.00–1.51)	513	1.1	(0.80–1.51)	156	0.86	(0.45–1.64)	108	**2.08**	**(1.01–4.29)**
40–50 dB	1157	**1.33**	**(1.05–1.67)**	479	1.13	(0.78–1.64)	152	0.93	(0.46–1.88)	74	2.07	(0.93–4.61)
>50 dB	246	**1.44**	**(1.03–2.04)**	117	1.64	(0.96–2.79)	35	1.62	(0.62–4.25)	16	3.09	(0.94–10.23)
Trend	*P* for trend = 0.01			*P* for trend = 0.18			*P* for trend = 0.57			*P* for trend = 0.05		

Statistically significant results at level alpha = 5% are marked in bold, adjusted for NO_2, temperature, precipitation, and holiday.

Table 2. (From Does night-time aircraft noise trigger mortality? A case-crossover study on 24 886 cardiovascular deaths. Saucy et al. Eur Heart J. 2021 Feb 21;42(8):835-843.)

9. The auditory system, acting as a vigilant watchman, continually monitors the environment for potential threats even during sleep. Humans process and respond to environmental sounds while asleep. Meaningful or potentially harmful noise events, even at the same sound pressure level (SPL), are more likely to cause sleep disturbances than less significant events. Aircraft noise, being intermittent, affects sleep primarily based on the number and acoustical properties of individual noise events, including maximum SPL and spectral composition. The impact of aircraft noise on sleep is influenced by situational factors such as sleep depth and individual factors like noise sensitivity. Certain populations, such as the elderly, children, shift-workers, and those who are ill, are particularly vulnerable to noise-induced sleep disturbance.

Repetitive noise-induced arousals negatively affect sleep quality by altering sleep structure, leading to delayed sleep onset, early awakenings, reduced deep and rapid eye movement (REM) sleep, and increased time spent awake or in superficial sleep stages. Deep and REM sleep are crucial for overall sleep recovery and memory consolidation.

10. The American Academy of Sleep Medicine (AASM) employs a standardized system for scoring wake and sleep based on epochs, which are typically 30-second intervals of recorded physiological data during a sleep study. In this context, wakefulness is characterized by the presence of alpha and/or beta electroencephalogram (EEG) activity, along with muscle tone and eye movement. Sleep, on the other hand, is classified into different stages, including non-rapid eye movement (NREM) stages 1, 2, 3, and REM sleep, each associated with distinct EEG patterns and other physiological parameters.

    Brief EEG and EMG activations are called arousals. It should be noted that specific criteria is defined for an “arousal” but the state of wakefulness is defined in the AASM guidelines on scoring of sleep rather than a definition for an “awakening.” Awakenings are longer arousals, defined as EEG and EMG activations that last for at least 15 s and therefore lead to a classification of the sleep stage as “awake.” Sleep stage changes are defined as transitions from one sleep stage to a different sleep stage. Sleep stage NREM stage (S) 1 has minimal or no significant impact on the restorative benefits of sleep. Research has identified heightened proportions of sleep stage S1 as common outcomes of sleep fragmentation. Therefore, in noise effects research, polysomnographic “awakenings” mean transitions from sleep stages REM, S3, or S2 to the sleep stages S1 or awake.

    Basner has outlined that awakenings serve as suitable indicators for sleep disturbances caused by environmental noise for several reasons:[xiii]

    a. The act of awakening represents the most potent form of activation, significantly impacting the rejuvenating functions of sleep.
    b. Awakenings are relatively specific, with the occurrence of spontaneous awakenings being comparatively infrequent when compared to other indicators.
    c. Unlike arousal, awakenings typically involve prolonged and unimodal increases in heart frequency.
    d. The majority of awakenings are of short duration, lasting exactly one epoch (15 to 45 seconds), making them unlikely to be remembered the following day. However, longer awakenings, associated with waking consciousness, may be recalled and can

significantly influence the subjective assessment of sleep quality and quantity. Unlike sleep stage changes and arousals, which go unnoticed on the next day as they do not result in waking consciousness.

Dr. Penzel acknowledges a relationship between noise events and arousals but defines an awakening as *"transitions from sleep to wakefulness which last at least 30 seconds."* I note, that although the AASM do not provide a definition of awakening, his definition is at odds with the scoring guidelines. A threshold of at least 15 seconds would make more sense because if more than 15 seconds of a 30-second epoch on polysomnography being scored consists of wakefulness, the 30-second epoch is scored as wakefulness.

Awakenings are discussed on page 10 of the WHO ENG guidelines in the context of night-time railway or aircraft noise events that can clearly elicit physiological reactions that are mostly determined by L_{Amax}. On page 28, awakening reactions are given as an example of immediate physiological reactions during sleep. In table 3 on page 18 of the guidelines, the "probability of additional awakenings" is contextualised as a polysomnography measured outcome with examples provided from the literature on page 42, page 56 and page 70. Awakenings from sleep are contextualised on pages 40 and 70 under self-reported sleep outcomes and on page 18 the effects on sleep, as a measure, *"is not a proxy for physiological sleep quality parameters but is an important outcome in its own right."*

I recognise that a specific definition of awakenings has not been provided, but from the context outlined above, I would contend that both polysomnographic and self-reported awakenings as identified in the review by Basner and McGuire fall under the umbrella term of "awakenings" in the review but in terms of calculating the "probability of additional awakenings" it refers to polysomographic awakenings, specifically to transitions from sleep stages REM, S3, or S2 to the sleep stages S1 or awake.[xiv] The dataset from the STRAIN study, which investigated the effect of aircraft noise on sleep, was re-analysed in the review. In the original STRAIN paper, I note that the prognosis of noise effects in terms of the number of additional awakenings was mapped graphically demonstrating the areas with an average of one, two or three additional awakenings induced by aircraft noise.[xiii]

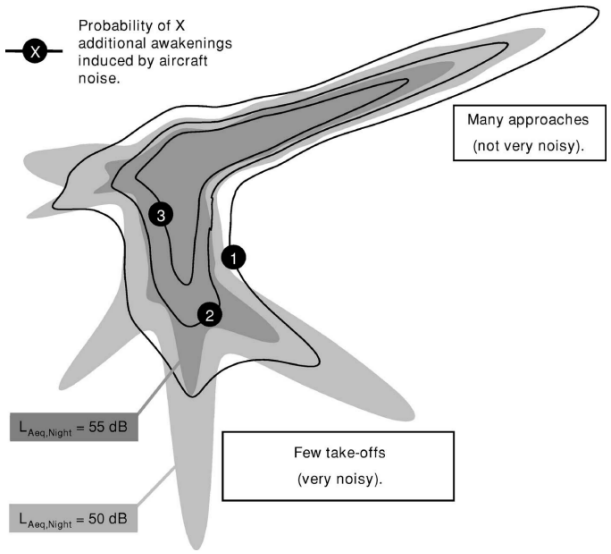


FIG. 5. Prognosis of noise effects for Frankfurt airport: on average one, two, or three additional awakenings induced by aircraft noise (black lines), L_{Aeq}=55 dB (dark gray), and L_{Aeq} =50 dB (light gray). Calculations are based on 25 000 nocturnal aircraft movements in the busiest six months of the year.

Figure 1. From Basner M, Samel A, Isermann U. Aircraft noise effects on sleep: application of the results of a large polysomnographic field study. J Acoust Soc Am. 2006 May;119(5 Pt 1):2772-84. doi: 10.1121/1.2184247. PMID: 16708935.

11. Contrary to the opinion of Dr. Penzel, it would appear that the utility of the probability of additional awakenings is an accepted and appropriate assessment tool. GRADE (Grading of Recommendations Assessment, Development, and Evaluation) is a widely used framework for assessing the quality of evidence and the strength of recommendations in healthcare. The GRADE criteria includes assessment of study design, risk of bias, inconsistency, indirectness, imprecision and publication bias. Based on the evaluation of these criteria, GRADE assigns a level of evidence ranging from high to very low. The quality of evidence was moderate for cortical awakenings (arousals) and self-reported sleep disturbance when assessed by Basner and McGuire using GRADE criteria exhibiting evidence of a dose-response.

    Furthermore, Dr. Penzel's assessment of the probability of additional awakenings being an appropriate measure of the effects of aircraft noise is at variance with the WHO ENG guidelines which, under critical health outcomes, clearly describe the effects on sleep as *"the most meaningful, policy-relevant measure of this health outcome. Self-reported sleep disturbances are a very common problem in the general population: they affect quality of life directly and may also lead to subsequent health impediments. Effects on sleep may be in the causal pathway to cardiovascular disease"* and clearly includes the probability of additional awakenings as an identified critical health outcome measure. It should be noted that on page 27 of the WHO ENG guidelines also specify that the "development process for the current guidelines adhered to a new, rigorous, evidence-based methodology, as outlined in the WHO handbook for guideline

development (WHO, 2014c). WHO adopted these internationally recognized standards to ensure high methodological quality and a transparent, evidence-based decision-making process in the guideline development".

Finally, I would contend that a systematic approaches to measuring the probability of increased awakenings based on acoustic parameters are available and utilised in the sector. For example, these calculations have been employed in the Zurich Aircraft Noise ZFI and Frankfurt Night Noise Index FNI since 2006 and 2007, respectively. [viii] Furthermore, the European Commission is actively engaged in initiatives to mitigate the ecological impact of aviation, specifically addressing noise concerns. One such project, the Aviation Noise Impact Management through novel Approaches (ANIMA), aims to enhance the well-being of individuals affected by aviation noise while assisting policymakers, researchers, and airport managers in making informed decisions that balance economic and regulatory considerations. Funded by the European Union's Horizon 2020 program, ANIMA focuses on minimizing acute effects, particularly aircraft noise-induced awakening reactions, to prevent long-term health risks.

As part of ANIMA's deliverables, the project emphasizes the principle of minimizing acute effects by analyzing data from two globally available field studies on aircraft noise impact during sleep. These studies utilized polysomnography and simultaneous acoustical measurements as the "gold standard." The analysis, conducted at airports with continuous nocturnal aircraft noise and night flight bans, indicates a high likelihood of awakening from an aircraft overflight, with results suggesting transferability to other airports.

Continuous monitoring of sound pressure levels and corresponding sounds during sleep enables precise event-related analysis. This approach considers various acoustical measures, sleep-related factors, and personal variables, resulting in an exposure-response function predicting the likelihood of awakening for each noise event based on its maximum sound pressure level.

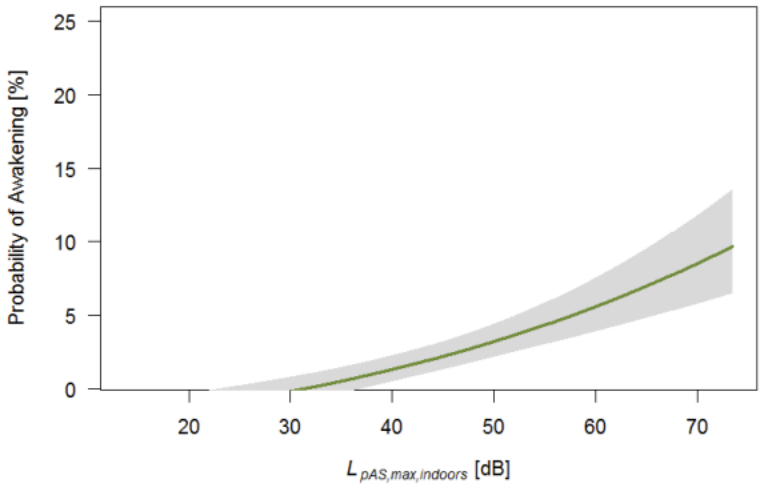


Figure 19: Probability of awakening as a function of the maximum sound pressure level indoors $L_{pAS,max,indoors}$ of one overflight. Standardized model for all STRAIN/NORAH 2012 data (Table 9). Parameters see Table 8.

Figure 2. (From U. Müller, "ANIMA D3.2 - Development of indicators for night noise protection zones")

The exposure-response functions offer two key advantages.[xv] Firstly, they provide a user-friendly metric, "additional awakenings," facilitating communication of the impact of nocturnal aircraft noise to residents and decision-makers. Secondly, these functions enable the development of protective strategies to prevent immediate physiological effects. This contrasts with conventional measures like the equivalent sound level (L_{eq}), which may not account for individual reactions to specific noise events.

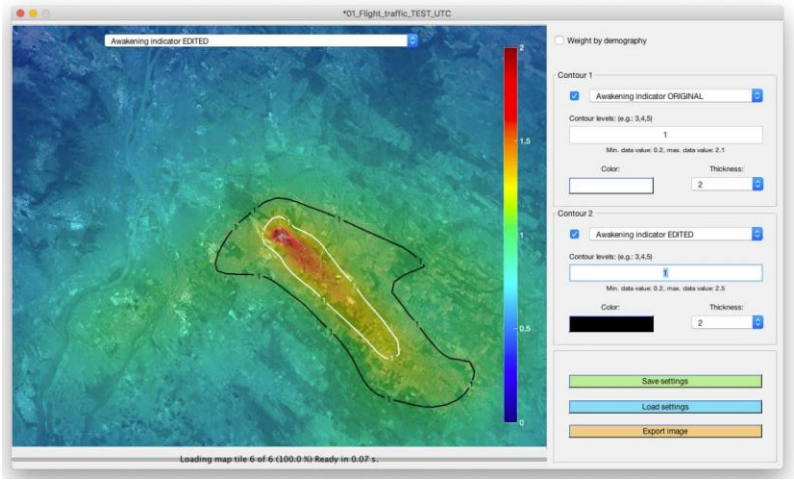


Figure 3. (From Haupvogel et al. The 13th ICBEN Congress on Noise as a Public Health Problem (ICBEN 2021)): Demonstrates that the increased zone boundaries of 1 additional awakening for an increase of air traffic for a hypothetic (exemplary) airport scenario can be mapped.

ANIMA aligns with limits established by Basner et al. for the protection concept, aiming to allow on average less than one additional aircraft noise-induced awakening per night, avoid morning-recalled awakenings, and prevent interference with the process of falling back asleep.[viii, xiii] These limits, informed by DLR laboratory studies, challenge traditional acoustical average levels, as demonstrated in the case of Leipzig/Halle airport, where night noise zones increased by 28%, highlighting the importance of considering human physiology in noise regulations.

12. Dr. Penzel mentions the review by Dr. Matthias Basner on aviation noise impacts.[xvi] This paper gives specific commentary on noise effects assessment, stating that exposure-response functions, which establish a connection between a noise indicator and a sleep-related outcome (like the probability of awakening), play a crucial role in health impact assessments and guiding political decisions.

    A more recent systematic review and meta-analysis has been performed updating the WHO evidence on the effects of environmental noise on sleep disturbance to include more recent studies and provides exposure response functions.[v] This analysis characterised sleep disturbance under 3 domains. Firstly, “awakenings from sleep,” referring to the period between sleep onset and final awakening. These awakenings are defined as events where a participant wakes from sleep, regains consciousness, and recalls the awakening the following morning. Second, the “process of falling asleep,” defined as the transition from wakefulness to sleep. Third, “sleep disturbance,” defined as the internal or external interference with sleep onset or sleep continuity.

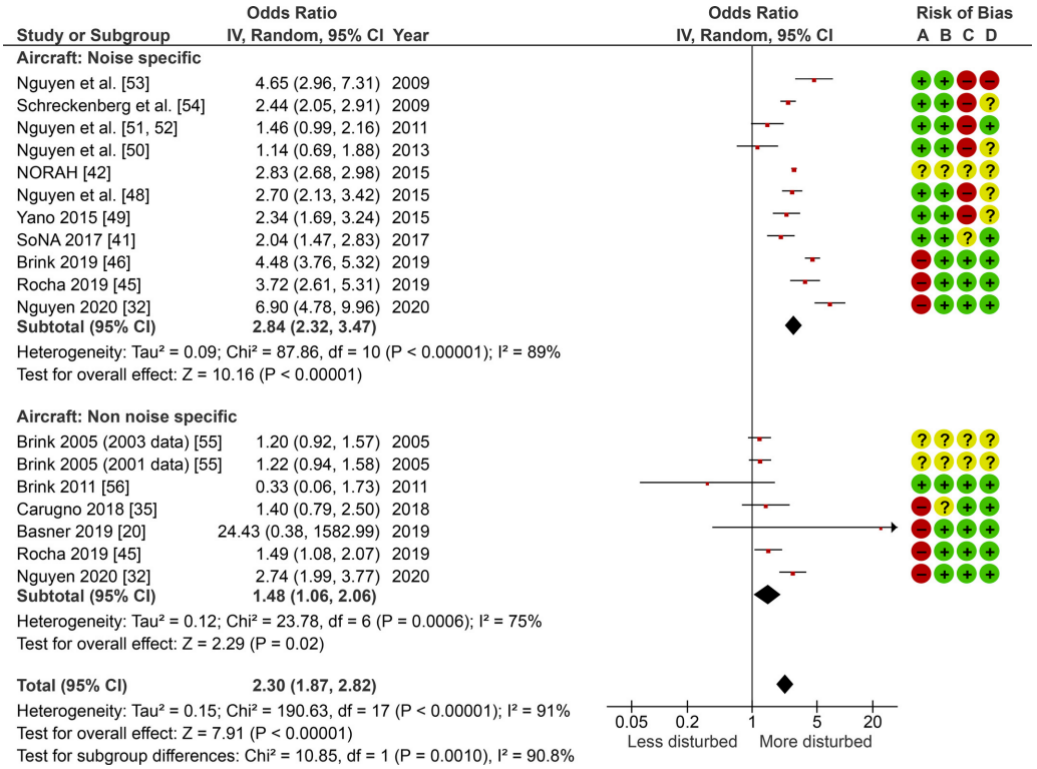


Figure 3. Forest plot for the odds of being highly sleep disturbed by aircraft noise per 10-dB increase in L_{night} (combined estimate derived from all relevant outcomes within studies). Subgroups are presented for questions that mentioned noise as the source of the disturbance, and questions that did not specify noise as the source of the disturbance. Risk of bias: A: selection bias; B: exposure assessment; C: confounding; D: reporting bias. Green (+) denotes low risk of bias, red (–) denotes high risk of bias, yellow (?) denotes unclear risk of bias. Plots were generated using an inverse-variance (IV) random effects method across the full noise range for each individual study (not restricted to 40–65 dB L_{night}). Note: CI, confidence interval; df, degrees of freedom; L_{night}, nighttime noise; NORAH, Noise-Related Annoyance, Cognition and Health.

Figure 4. (From Smith MG et al. Environmental Noise and Effects on Sleep: An Update to the WHO Systematic Review and Meta-Analysis. Environ Health Perspect. 2022). A forest plot is a graphical representation commonly used in meta-analyses to display the results of multiple studies investigating the same research question. This forest plot shows the odds of being highly sleep disturbed by aircraft noise per 10-dB increase in L_{night}. Each study is represented by a horizontal line, or "bar," and the position of the bar relative to the midline indicates the study's effect size. If the bar extends to the right of the midline as in this case, it indicates a positive effect, meaning that the odds of being highly sleep disturbed by aircraft noise per 10-dB increase in L_{night} is increased.

With a 10-dB increase in L_{night}, there was a statistically significant probability of being sleep disturbed by noise from aircraft with an odds ratio of 2.18 (see table 2).

Table 7. Summary of meta-analytic and evidence quality findings.

Sleep outcome	Noise source	Studies (n)[a]	Respondents (n)[a]	Quality of evidence	Noise metric	OR per 10-dB increase (95% CI)
Self-reported sleep disturbance in adults	Aircraft	11	19,488	Moderate	L_{night}	2.18 (2.01, 2.36)
Noise specified as source of disturbance	Road	14	31,738	Moderate	L_{night}	2.52 (2.28, 2.79)
	Railway	8	10,846	Moderate	L_{night}	2.97 (2.57, 3.43)
Self-reported sleep disturbance in adults	Aircraft	8	2,571	Low	L_{night}	1.52 (1.20, 1.93)
Noise not specified as source of disturbance	Road	7	38,380	Low	L_{night}	1.14 (1.08, 1.21)
	Railway	4	4,326	Very low	L_{night}	1.17 (0.91, 1.49)

Note: ORs were calculated in logistic regression models with L_{night} included as the only fixed effect and study included as a random effect, restricted to the noise exposure range 40–65 dB L_{night}. Models were run separately for each traffic mode and for sleep questionnaire outcomes that did or did not mention noise. Data shown are for the combined estimates calculated using average responses of the awakening, falling asleep, and sleep disturbance questions within studies. L_{night}, nighttime noise; OR, odds ratio.
[a]In the L_{night} range 40–65 dB for which ORs were calculated.

Table 3. (From Smith MG et al. Environmental Noise and Effects on Sleep: An Update to the WHO Systematic Review and Meta-Analysis. Environ Health Perspect. 2022).

The paper also includes exposure-response functions, showing a clear increase in the probability of sleep disturbance with increasing aircraft noise (see figure 2 and figure 3 below) .

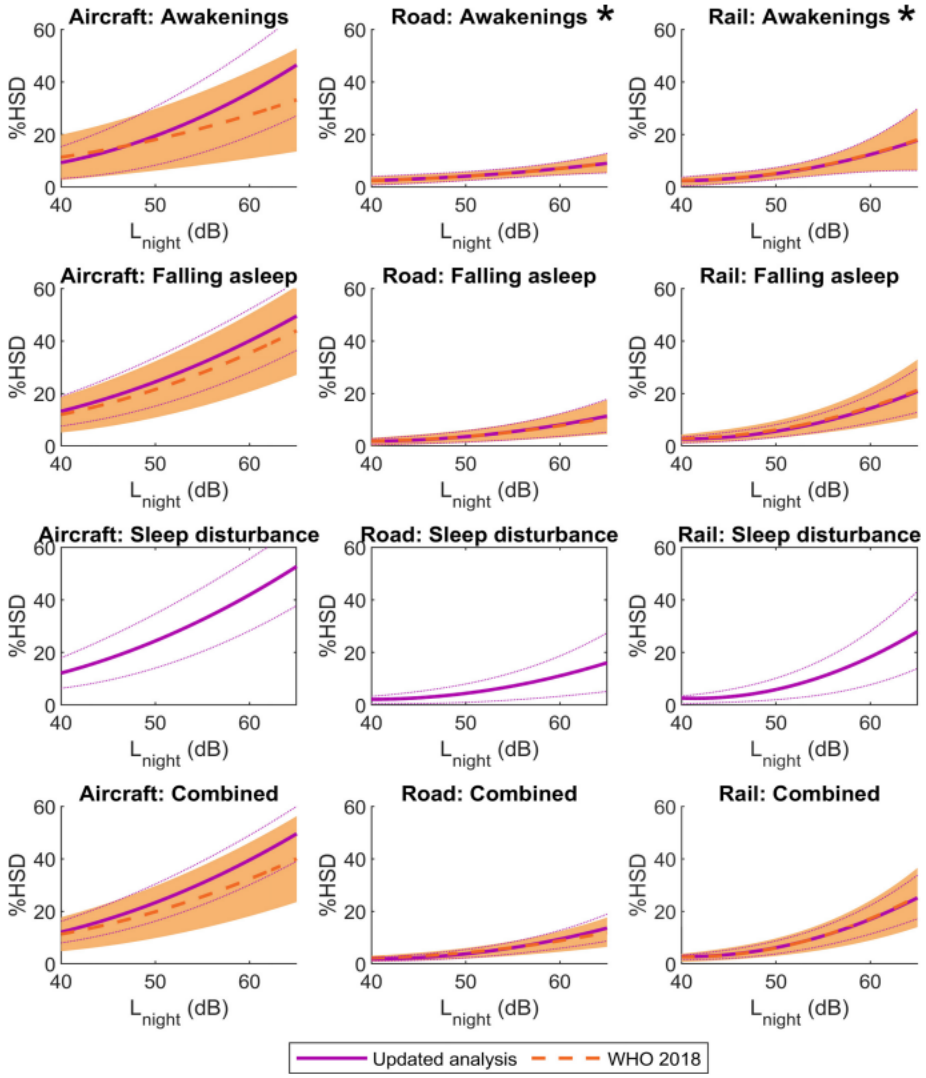


Figure 6. Probability of being highly sleep disturbed (%HSD) by nighttime noise, determined via questions that mention noise as the source of disturbance, stratified by disturbance question and traffic mode. Exposure–response relationships were derived using all available data, from the original WHO review[19] and the 11 newly identified studies. Results of the present updated analysis (solid purple lines with dotted 95% CIs) are compared against results of the 2018 WHO review[19] (dashed orange lines with shaded 95% CIs). Relationships for the sleep disturbance questions were not calculated previously. Asterisks (*) indicate sleep outcomes for which no new studies have been published since the WHO review. Parameter estimates were calculated in logistic regression models with L_{night} included as the only fixed effect and study included as a random effect, restricted to the noise exposure range 40–65 dB L_{night}. Models were run separately for each traffic mode and disturbance question. The combined estimate was calculated using average responses of the awakening, falling asleep, and sleep disturbance questions within studies. Note: CI, confidence interval; L_{night}, nighttime noise; WHO, World Health Organization.

Figure 5. (From Smith MG et al. Environmental Noise and Effects on Sleep: An Update to the WHO Systematic Review and Meta-Analysis. Environ Health Perspect. 2022).

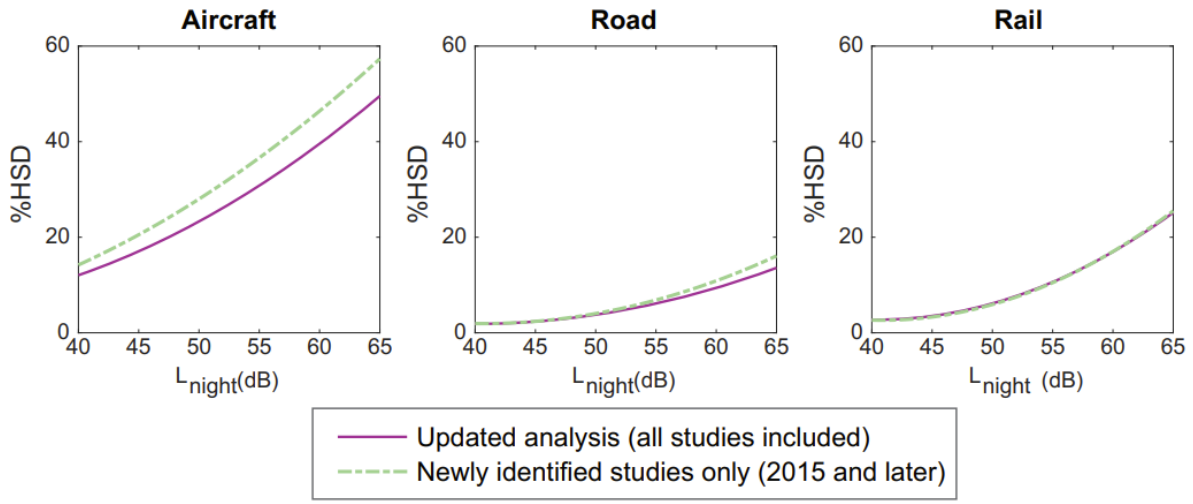


Figure 7. Exposure–response relationships for the probability of being highly sleep disturbed (%HSD) by nighttime noise for questions that mention noise. Curves are shown for the updated analysis that includes all available data (solid purple lines), and for analysis including only newly identified studies published after the WHO review[19] (dashed green lines). Data are calculated as the combined response using average responses of the awakening, falling asleep, and sleep disturbance questions within studies, determined as the within-study average of disturbance questions that explicitly mentioned noise as the source of sleep disturbance. Parameter estimates were calculated in logistic regression models with L_{night} included as the only fixed effect and study included as a random effect, restricted to the noise exposure range 40–65 dB L_{night}. Models were run separately for each traffic mode. Note: L_{night}, nighttime noise; WHO, World Health Organization.

Figure 6. (From Smith MG et al. Environmental Noise and Effects on Sleep: An Update to the WHO Systematic Review and Meta-Analysis. Environ Health Perspect. 2022).

13. Bickerdike Allen Partners state that *"When considering the expected number of nightly awakenings given in Section 3.4 it should be noted that they relate to a population of over 1 million people, and that awakenings occur irrespective of the any aircraft noise events. The WHO notes a healthy adult briefly awakens ca. 20 times during an 8 h bed period. Combining these values gives an underlying level of awakenings of ca. 20 million. In comparison to this the additional awakenings due to aircraft noise are much lower."*

    This grossly misrepresents the significance of additional awakenings which may arise due to aircraft noise. Firstly, of the over 1 million people in the area, those with an annual dB L_{night} <40 should be affected negligibly and those with an annual dB L_{night} <45 to a very low degree, if at all, in terms of additional awakenings due to single noise events as the effect of a change in noise level tends to increase with the absolute level of noise experienced. In the EIAR, table 13C-52 indicates that the existing population counts for dB L_{night} ≥40, dB L_{night} ≥45 and dB L_{night} ≥50 in 2025 based on the proposed changes are 168,472, 46331 and 8766 respectively, far smaller cohorts, which likely more closely reflect the population at risk of experiencing than one additional aircraft noise induced awakening per night. Rather than presenting the additional awakenings in the context of the whole noise study area, it would have been more appropriate and informative to also present the additional awakenings at the individual representative

locations (described in chapter 13 of the EIAR) and in the context of the local area population, similar to how L_{Amax} noise levels in Table 13C-130 are presented.

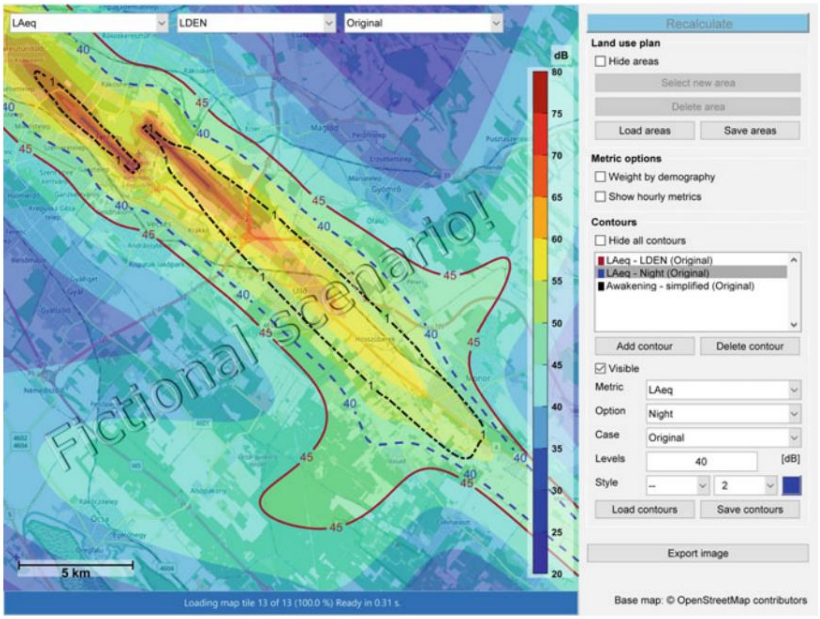


Fig. 5 Multiple metrics can be shown at the same time. Color mapping depicts L_{den}, brown continuous contour shows the limit for $L_{den} = 45$ dB, blue dashed curve shows $L_{night} = 40$ dB, while the black dash-dotted line encloses the area with > 1 additional awakening per night

Figure 7. (From Marki, F. et al. (2022). Towards Mapping of Noise Impact.)

The data on additional awakenings should also be mapped as above, with clear depiction of the area with > 1 additional awakening per night at a minimum, as it is recommended to keep the average additional awakenings induced by noise below 1 per night and this would give a very clear, user-friendly metric for communities near the airport.[xvii] This would also be consistent with the STRAIN dataset as outlined above. Rather than presenting the additional awakenings as a user-friendly metric, Bickerdike Allen Partners have instead presented it in a fashion which is essentially uninterpretable in terms of significance.

Secondly, the description given also suggests that all the population affected is uniformly healthy which is almost certainly not the case. It should be noted, for example, elderly people are more likely to be “diseased” and in general will have a lighter sleep and can be more easily woken by noise events. An increased arousal index is also inversely related to overall cardiovascular health and a further increase in sympathetic activity resulting from arousals may have disproportionate affect on those at highest cardiovascular risk.

It should be remarked that the additional arousals are more likely to have an increased proportion of behavioural or conscious awakenings compared to the baseline normal awakenings. Dr. Penzel describes the potential for *"very uncomfortable perceptions" with the worst case scenario terms of perceptions that "a person wakes up and does not fall back to sleep. Because of the natural sleep structure the morning hour between 6:00 and 7:00 is more vulnerable to awakenings and a bigger concern."* When considering the significance of additional awakenings, the protection of the more sleep-vulnerable subset of the population has to be kept in mind.

14. Airport neighbours often cite sleep disturbance at the beginning and end of the night as the most objectionable and annoying aspect of night-time aircraft noise. Understanding the psychological impact of any disturbances is important in guiding approaches to manage and improve the well-being of individuals affected. I agree with Dr. Penzel that "*the perception of study participants in relation to air traffic is a significant factor in reporting of disturbance*."

    Expanding on this, the peak-end rule, a psychological principle introduced by Nobel laureate Daniel Kahneman, suggests that people tend to judge and remember an experience based on its most intense point (peak) and its ending.[xviii] This concept may be particularly relevant in understanding the psychological impact of sleep disturbance due to aviation noise in neighbourhoods close to airports. Very simply, it should be recognized that the peak-end rule can influence the perception and emotional experience of individuals affected by aviation noise disturbance.

    The "peak" may be represented by the most disruptive and intense periods of noise, which can be quantified by the maximum noise level and additional awakenings during a period.

    The "end" refers to the concluding moments of the experience however, which could include the lingering effects of disrupted sleep and/or the immediate aftermath of the noise event. In practical terms, individuals living near airports may recall and assess the overall impact of aviation noise predominantly based on the intensity of the disturbance close to the end of their sleep cycle, a time period which could coincide with increased airport activity and early morning flights taking off.

    The peak-end rule is a psychological heuristic evident across human behaviour and not specific to sleep but it is evident and consistently demonstrable in research studies of noise and sleep

disturbance, both in laboratory and in field studies, albeit not necessarily recognised by the authors. A research study involving 12 women and 12 men who spent two weeks in a sleep laboratory investigated the impact of three different noise scenarios, each with noise restrictions at various times throughout the night (11 PM–3 AM, 11 PM–5 AM, 3 AM–7 AM).[xix] The polysomnograms were analysed, revealing that noise at the beginning of the night hindered the process of falling asleep. However, disturbances experienced early in the night were compensated for if there were nighttime curfews in place. Conversely, even brief periods of noise toward the end of the sleep period were found to cause disruptions in sleep.

This finding aligns with observations from various studies on transportation noise, suggesting that noise exposure has the most significant effect on self-reported sleep quality in the morning, when sleep pressure is lowest. In a Norwegian study involving 13,019 participants and a Swiss study with 1,375 participants, modelled nighttime traffic noise exposure was primarily associated with self-reported early awakenings, while associations with other sleep-quality parameters, such as waking during the night or difficulty falling asleep, were less prominent.[xx, xxi] Psychoacoustic surveys also noted that noise exposure during the early part of the night and just before usual awakening was reported as the most annoying.

This peak-end rule is of particular significance as the DAA is seeking one hour's additional operational flexibility on each side of night shoulder hours. The increase in noise at the beginning of the night could potentially hinder the process of falling asleep but more importantly, due to the peak-end rule, the proposed change could have a disproportionate negative effect on sleep quality overall due to proposed change between 6 AM and 7 AM.

15. Dr. Penzel also states that *"the perception of (the) air traffic appears to a have a real objective impact on health and sleep."* In the context of the proposed changes in planning conditions for an airport runway having the potential for the increased disturbance of nearby residents and a negative impact on their health and sleep, the psychological concept of framing is also crucial in shaping the perception of the disturbance.[xxii]

The DAA has contributed to a negative framing of the proposed changes by local residents. The North Runway at Dublin Airport opened on 24 August 2022. When the runway opened, flight paths adopted by planes leaving the airport did not comply with the flight plans that had been submitted and environmentally assessed when planning was granted for the runway. Residents who had a reference point of no airport noise and no expectation of airport noise affecting them

might have initially likely framed their living environment as peaceful. The shift in framing from a noise-free environment to one with increased airport noise has probably amplified some residents' sense of loss and annoyance. It has also likely contributed to mistrust between the DAA and local communities, which once present, can be almost impossible to remedy.[xxiii] The emotional response to the proposed changes may now have been amplified given the contrast between their previous expectations and the effect of the non-compliant flight plans, which could have intensified negative framing by presenting a conceivable, albeit inadvertent, insensitivity to residents' concerns on the part of the DAA. It is now likely that negative framing of the proposed changes by local residents will increase their perception of disturbance and the negative consequences on health and sleep.

16. In brief, I believe that the changes proposed by the DAA with regard to the operation of the North Runway are likely to harm health, especially in terms of sleep quality.
    a. It is crucial to highlight that opting for the interim target of 55 dB L_{night} instead of the WHO-recommended target of 40 dB L_{night} for air traffic significantly contributes to these adverse health effects.
    b. Recent data suggest that night-time aircraft noise can trigger acute cardiovascular mortality.
    c. Bickerdike Allen Partners on behalf of the DAA have poorly presented the data on additional awakenings associated with the proposed changes and have misrepresented the population that will truly be affected by additional awakenings. The manner in which they have presented their data is unreferenced and not in keeping with European norms. Despite it being recommended to keep the average additional awakenings induced by noise below 1 per night, this very clear, user-friendly metric for communities near the airport of the area with > 1 additional awakening per night is not presented at all.
    d. The one hour's additional operational flexibility on each side of night shoulder hours being sought could have a disproportionate negative effect on sleep quality overall due to hindrance of the process of falling asleep and the peak-end rule heuristic.
    e. Errors in flight paths utilised in connection with the North Runway have likely contributed negative framing of the proposed changes by local residents and will increase their perception of disturbance and the negative consequences on health and sleep.

I suggest a thorough consideration of the outlined points to carefully assess the potential health impacts, with a priority on prioritizing the well-being of the residential communities affected in the decision-making process.

17. To the best of my knowledge the facts in this report are accurate and the opinions are true. The report has been dictated electronically. I apologise for any unrecognised typographical errors that persist and reserve the option to correct them. I reserve the option of revising this report and opinion in the light of subsequent disclosure of further relevant material.

Signed electronically on 22/11/2023:



Dr John F. Garvey MB BCh BAO PhD MRCPI FRCP (Edin)

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APPENDIX 5

Environmental Assessment Report from Sabrina Joyce-Kemper

Environmental Assessment Chapter

1. Introduction

1.1 This chapter has been prepared by Sabrina Joyce-Kemper as an individual member of the public affected by aircraft noise and on behalf of St. Margaret's and The Ward / FORUM submission. Ms Joyce-Kemper has an advanced diploma in Planning and Environmental law from the Honorable Kings Inn and is local to Portmarnock and involved with environmental matters in her locality.

1.2 We believe that the amendment application does not provide sufficient information for the Board to carry out an Environmental Impact Assessment and Appropriate Assessment that is in accordance with the law. We also believe that the amended application and the most recent additional information, if accepted will constitute an amendment to the original development application outside of the" relevant action" in respect of aircraft noise which would require a dual application for consent under section 34 of the Planning and Development Act of 2000. We also believe that the application materially contravenes the Fingal Development Plan 2023-2029.

1.3 We wish at this stage to adopt all third-party submissions made in relation to F20A/0668 / 314485 without prejudice to the arguments that those submissions make, whether they are in conflict with our own arguments or in support of them. This includes Ms Joyce-Kempers other submission in her personal capacity.

1.4 The instant planning application is described as follows:

A proposed development comprising the taking of a relevant action only within the meaning of Section 34C of the Planning and Development Act 2000, as amended, which relates to the night-time use of the runway system at Dublin Airport

1.5 Below we lay out the reasons and considerations for our objection to this planning application.

2. Administrative / Procedural issues:

2.1 **Incorrect application procedure.** There are aspects of this application that are not governed by Section 34B and 34C of the Planning and Development Act and do not therefore fall under 'operating restrictions' or 'noise mitigation measures', they are in fact changes to the originally granted flight paths that intensify and expand the noise impacts on communities. These changes also impact on land use planning in public safety zones which fall outside of noise mitigation and therefore materially contravenes the Fingal Development plan 2023 -2029.

2.2 These non-relevant action amendments need to be identified and separated from noise mitigation measures and operating restrictions and applied for in a dual planning application under Section 34 of the P&D Act of 2000 to present with associated EIAR and NIS covering all current and historical cumulative impacts.

2.3 **Development in multiple functional areas.** As the Development impacts on more than one local authority functional area and therefore communities in multiple counties and municipalities. As such there should be statutory consultation with Dublin City Council, Meath County Council, and any other council whose functional area may be impacted by the changes in the relevant action elements of the planning application. Despite the airport being removed from the 7th Schedule on relation to Strategic Infrastructural Development (SID), the fact that the flight paths intensify noise and impact on multiple local authorities may have triggered a dual assessment as an SID or at the very least an SID like statutory consultation and engagement with councilors in the public interest.

2.4 We refer the inspector/ board to Section 37E(4) of the Planning and Development (Strategic Infrastructure) Act 2006 which states:

(*4) The planning authority for the area (or, as the case may be, each planning authority for the areas) in which the proposed development would be situated shall, within 10 weeks from the making of the application to the Board under this section (or such longer period as may be specified by the Board), prepare and submit to the Board a report setting out the views of the authority on the effects of the proposed development on the environment and the proper planning and sustainable development of the area of the authority, having regard in particular to the matters specified in section 34(2).*

2.5 **Invalid NIS and ulta vires decision.** The issue of ANCA producing their own NIS for the relevant action and then being the decision maker on the NIS they commissioned raises issues of irrationality, acting ultra vires of their remit in producing an NIS (rather than the applicant) and being a judge in their own cause. St Margret's and the Ward did attempt to appeal the ANCA decision for this and other reasons, but we were informed by the Board that this was not possible. We again put it to the bord that the NIS prepared by ANCA is inadmissible and its decision invalid in law.

2.6 **Breaches of planning conditions:** It must be noted that the applicant has breached planning conditions in relation to number of night movements in excess of that permitted under condition 5 and in relation to the permitted flight paths/ tracks that were assessed in the original EIS and informed the making of multiple development plans in relation to spatial planning and the identification of public safety zones and policy on public safety zones which are also adopted in the current Fingal Development plan.

2.7 In fact the applicant as voting members of the Dublin Airport slot co-ordination committee have knowingly and willfully and with full knowledge of their legal obligations, decided to potentially breach planning and environmental regulations in relation to the operating conditions included in this application, which are attached to the grant of the parent planning permission for the North Runway. They have done so after full discussions and risk assessments, when deciding co-

ordination parameters for Summer 2023/Winter 2023 and Summer 2024 slots some months in advance of the slot periods. The slot decisions are attached at Appendix A, B and C.

These conditions that the slot decisions assessed and decided to contravene are:

1.3 **3(d) of the North Runway Planning Permission** (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19). Condition 3(d) and the exceptions at the end of Condition 3 state the following:

3(d). Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports.'

2.8 **Condition no. 5 of the North Runway Planning Permission** (Fingal County Council Reg. Ref. No. F04A/1755; ABP Ref. No.: PL06F.217429 as amended by Fingal County Council F19A/0023, ABP Ref. No. ABP-305289-19) which provides as follows:

On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92-day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007. Reason: To control the frequency of night flights at the airport so as to protect residential amenity having regard to the information submitted concerning future night time use of the existing parallel runway'

2.8 The net effect of the slots' decisions, is, if and when they were implemented, constituted a potential intentional breach of the planning permission operating conditions. This fact, that the committee including the applicant may have acted with intent to breach Planning conditions, will not sit well with the Courts when the current JR of FCC enforcement, case is at hearing stage. The Courts expect parties to have "clean hands" / not to have partaken in unfair conduct. Actively assessing the risk of adhering to planning conditions 3(b) and 5, when deciding the slot S23 parameters and voting to potentially breach them anyway in favour of economic market concerns, then carrying those decisions through to W23 and this decision S23 raises the legal violation of "the clean hands doctrine". An Bord Pleanála as a quasi-judicial body must also comply with legislation under section 34(12) of the planning act in relation to unauthorised development and whether the breach was carried out in a deliberate manner, which we could be supported by the slot co-ordination decisions.

2.9 We wish to point out to the Inspector that currently active Winter 2023 slots and the future Summer 2024 slot decisions are relevant evidence that must be considered by the inspector to be proof of the committees (including applicant) intention to continue breaching the

operating conditions and restrictions of the parent permission some of which make up this application. Section 6.2.2. of the Worldwide Airport Slot Guidelines (WASG)[1] states:

6.2.2 The coordination parameters represent the maximum capacity available for allocation considering the **functional limitations** at the airport such as runway, apron, terminal, airspace, and ***environmental restrictions*** (emphasis added)

In the document the co-ordination parameters are described as follows:

Coordination Parameters: the maximum capacity available for allocation at an airport considering the functional limitations at the airport such as runway, apron, terminal, airspace, and environmental restrictions declared by the airport or ***other competent body.*** *(emphasis in bold added)*

2.9 The industry guidelines therefore state that the parameters considered must be within the constraints to capacity and include limitations and restrictions declared by any other competent body, in this case the local authority and an Bord Pleanála. As the IAA and the slot co-ordination committee have failed to comply with the sustainable planning conditions put in place by ABP in 2007, it falls to the Board to find that the applicant cannot benefit from a breach of planning consent and that the current application should be refused on the basis that no AA was ever carried out on the parent permission in contravention of the Habitats and Birds Directives. In previous submissions we have made detailed case for the invocation of section 34(12) to refuse to accept this planning application as under the current laws it cannot be regularised.

2.10 **Competition Law.** As a member state of the EU, Ireland and its competent authorities required to comply with EU law particularly in relation to the single market. In order to ensure a level playing field, the legislation on State aid (Article 107 and 108 of the Treaty on the Functioning of the European Union (TFEU)) and competition (Articles 101 to 109 TFEU — mergers, alliances, price-fixing, etc.) applies to the air transport sector.

2.11 EU rules ensure that all carriers, European and non-European, are granted the same rights and same opportunities to access air-transport-related services. This may not, however, be the case in some third countries where discriminatory practices and subsidies may give unfair competitive advantages to air carriers from those third countries. Competition law is in place in order to regulate anti-competitive conduct within the single market.

2.12 The applicant as part of the co-ordination slot committee by taking part in a process to potentially breach planning and environmental regulations that apply to all member states equally, the committee and by extension the IAA if they adopt the decision, may be seen to be breaching EU internal market competition law. Other airports in EU member states must comply with regulations and the terms of their planning permission and operating licenses. daa by potentially seeking to dis-apply apply the same rules that other Airports in EU member states must adhere to in relation to EIA, AA and compliance with planning consents, could be gaining an unfair advantage in enticing airlines to use Dublin Airport.

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1 https://www.iata.org/contentassets/4ede2aabfcc14a55919e468054d714fe/wasg-edition-2-english-version.pdf

2.13 To be lawful at the point of application for amendment, the previous operational application of the parent consent that this application seeks to amend must have complied with the planning conditions, as implemented under EU planning and environmental law. If it did not, section 34(12) is a legitimate remedy the Board can utilise to nullify the unlawful consequences of a breach of EU law. Namely habitats directive, EIA directive and competition law.

2.14 **State Aid Issues.** DAA are a semi state company (albeit commercial) but have recently received substantial state aid and subsidies from the state particularly during and after the covid restrictions had an economic impact on the airport. Recent judgments from the European Courts in Luxembourg have confirmed that the construction and operation of an airport may constitute an economic activity, which are subject to the TFEU rules on State aid.

2.15 As a semi-state body if An Bord Pleanála;

a) allow or facilitate the applicant to benefit from amending a planning consent in breach of Planning and Environmental law, and

b) allow them to regularise a potential breach of competition law by making a decision to grant this application

- are they aiding and rewarding the DAA (another semi state body) and the airlines to benefit economically from non-compliance with an EU regulatory regime? Could this be seen as giving state aid to the airport? And is the form of state aid illegal under the TFEU?

2.16 We know that the airport was given tens of millions in State aid under the COVID 19 Temporary framework and may have benefited from state aid via the adoption of co-ordination slots that may have breached planning and environmental law. But there are conditional provisions placed on State aid by the EU. While the focus of State aid control is the protection of the internal market against distortions of competition, as a general matter of coherence within the EU legal order, the Commission must also ensure that State aid is not contrary to other provisions of EU law, including EU environmental law. In a nutshell to receive State aid the DAA must be in compliance with EU legislation/ regulations. The inspector and the Board need to be cognisant of this.

2.17 Insufficient time was given by the Board for members of the public concerned to review highly technical documents. Just the minimum requirement in law of 5 weeks was granted. This was in spite of numerous members of the public contacting the Board and requesting more time due to overlapping planning applications by daa.

2.18 When the applicant first lodged this application the North Runway had not been commissioned. In fact, this is first opportunity for people to give evidence on the failure of the current mitigation measures to prevent awakenings and severe sleep disturbance. Therefore, we ask the board to revisit holding an oral hearing, in the interests of justice.

3. Appropriate Assessment:

3.1 In previous submissions in relation to this application we have gone into great detail on the issue of our National Airport never being subject to an appropriate assessment of the cumulative impacts of the Airport development and infrastructure. This situation of significant and consequential lack of implementation of the Birds and Habitats Directive cannot be allowed to continue. The Board have a statutory duty to ensure that EU law is applied in its fullest iteration, in its decision-making process. On some planning consents the applicant has carried out screening, submitted an NIS but only for piecemeal development and never has it even attempted to carry out a robust EIA and AA of the entire Airport campus.

3.2 This position is no longer tenable and must be corrected. The cumulative impacts of the Dublin Airport Campus on our NATURA2000 Network must be assessed. This can also be applied to a master EIAR. Legal precedent would be case C-392/96 which states*:*

"The purpose of the EIA Directive cannot be circumvented by the splitting of projects and the failure to take account of the cumulative effect of several projects must not mean in practice that they all escape the obligation to carry out an assessment when, taken together, they are likely to have significant effects on the environment within the meaning of Article 2(1) of the EIA Directive."(C-392/96, Commission v. Ireland, paragraphs, 76, 82; C-142/07, Ecologists en AcciónCODA, paragraph 44 ; C-205/08, Umweltanwalt von Kärnten, paragraph 53; Abraham and Others, paragraph 27; C-275/09, Brussels Hoofdstedelijk Gewest and Others, paragraph 36)

3.3 The problem that is frequently encountered in planning applications is that of carrying out an AA on a development and having a finding of no significant effect. Then incorrectly carrying out a cumulative impact assessment by concluding because each development in isolation had a finding of no significant effect then cumulatively there could be no significant effects. This method is manifestly wrong. All effects identified within each development no matter how significant must be assessed in a cumulative matrix. Below at Figures 1 and 2 we give a visual representation via info-graphic of the correct and incorrect methods of cumulative assessment to be used in AA and EIA assessments.

3.4 Taking the correct methodology into consideration we can safely conclude that as previous AA and EIAR did not apply the correct methodology a robust AA and EIA is now required. Based on an initial examination of airport planning consents it is clear that AA and EIA assessments were not always carried out on new development applications. In order to try and rectify this we have compiled a list of planning applications relating to the Dublin Airport campus in Appendix D, since the implementation of the Habitats Directive in the EU. While some applications are for international modifications there may be capacity, waste and water, traffic components that need to be assessed. DAC certificates and Fire Certificates may or may not require assessments but should still be included in the matrices for cumulative impact.

3.5 The southern runway was built in advance of the implementation of the habitats directive as was the old airport building but their current uses and impact on NATURA2000 sites should be included in cumulative impact assessments.

3.6 In addition to the compliance issues identified earlier, the daa is not in compliance with condition 10 of the parent permission as FCC have deemed their compliance submission unacceptable and not as per the requirements of the condition. This condition directly impacts on the ability of ABP to assess this amendment application in relation to aircraft noise, mitigation and compliance with the NAO.

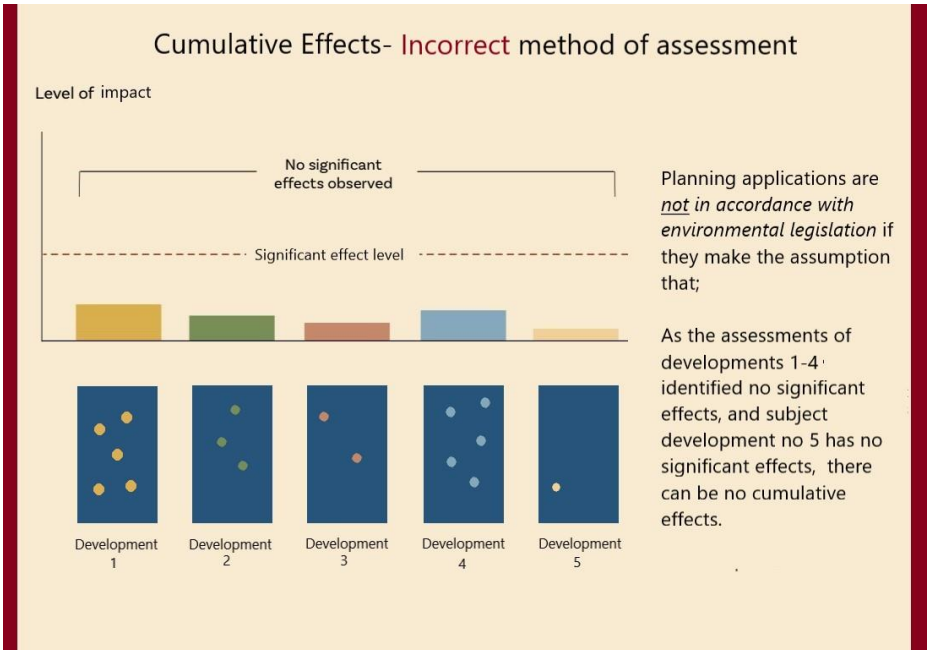


Figure 1: Incorrect method of cumulative assessment.

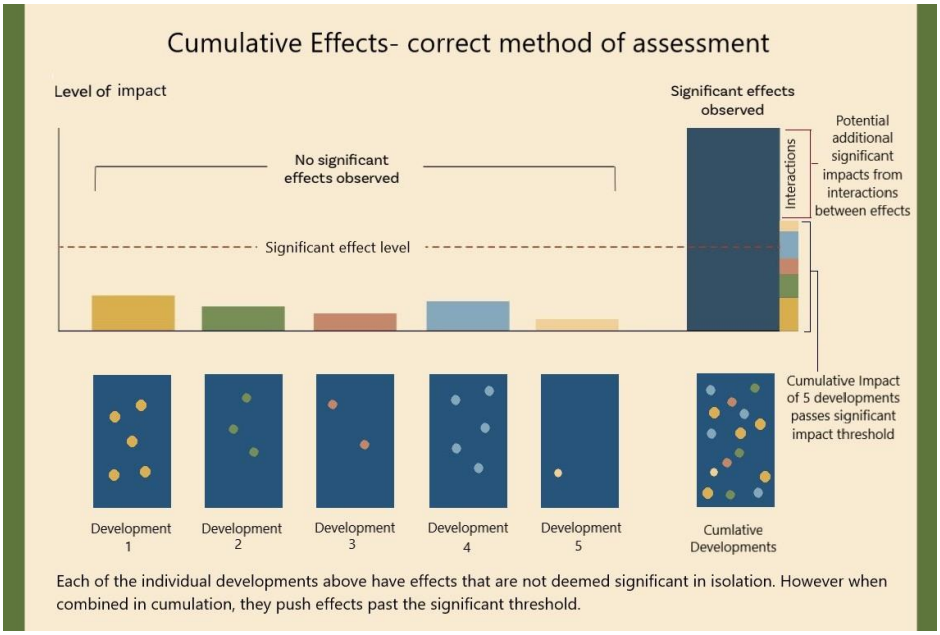


Figure 2. Correct method of cumulative assessment

3.7 Very Recent concerns have been raised about PFAS contamination of soils and water information has come to light of 150 tonnes of contaminated soil that may or may not relate to the North Runway consent being removed and sent to the Netherlands for remediation treatment. The PFAS contamination can come from firefighting foams and de-icing agents used during the historical operations and operations of the North Runway.

3.8 We tried to locate the water (and Air) emissions monitoring data that may contain this information, but it appears that the DAA is also in breach of conditions 21 and 22 of the parent commission in that it is not putting the water and air monitoring raw data online on its website as per the terms of the original grant of permission. It appears that Fingal County Council incorrectly confirmed compliance with these conditions which have not been met, and now are proving a barricade to effective public participation in making this submission. The conditions in question are as follows.

21. A monitoring regime for the monitoring of surface water discharged to streams and the public sewer shall be agreed in writing with the planning authority and shall be fully operational prior to the completion of construction of the runway. Monitoring results shall be submitted to the planning authority on a quarterly basis ***and shall be made available for public inspection on the Dublin Airport Authority's website****. Reason: In the interest of public health and to ensure continuous monitoring of surface water discharges from the site.*

22. The Dublin Airport Authority shall monitor air pollutant concentrations within the environs of Dublin Airport at locations to be agreed with the planning authority. The pollutants to be measured shall include nitrogen dioxide, sulphur dioxide, benzene, carbon monoxide, particulates PM10 and ozone. The measurements shall be undertaken so that concentrations can be compared with compliance of the appropriate National Air Quality Standards. The monitoring network shall include both continuous sampling equipment and passive sampling methods for monitoring the air pollutant parameters. Results obtained from the air quality monitoring network shall be submitted to the planning authority on a quarterly basis, ***and displayed on the Dublin Airport Authority website.*** *The frequency and pollutant parameters shall be reviewed on a yearly basis to ensure adequate monitoring. Reason: To ensure adequate monitoring of emissions and air quality.*

3.9 The impact of PFAS contamination via surface runoff and ground water filtration needs to be assessed as part of this application. All monitoring data must be made available in compliance with the planning conditions. The increase in night flights will mean more planes will need to be de-iced in the colder nocturnal periods. This means an increase in PFAS contamination to surface waters. The Board cannot seek to make a decision without a full assessment via EIA and AA of the impact on SAC/ SPA and the water body catchments that re receiving waters of the Airports surface runoff.

3.10 The applicant has failed to put definitive evidence before the board on bird air strikes and impacts on SPAs. There are no up to date surveys provided in particular for the new Western Irish Sea SPA. The applicants AA screening found no need for a stage two with absolutely no evidence to base this outcome on. In response to frequency of bird strikes the applicants response is vastly different to the information the IAA have in their 2022 safety review report

(appendix E) which indicated that bird strikes are a major safety issue for the airport and if it impacts on protected habitats and species needs to be assessed. Th IAA report gives the exact numbers of bird strikes in 2022 and previous years. The applicant's previous response is insufficient, and a detailed and evidential assessment and report must be completed.

3.11 In summary the compliance issues which constitute unauthorised development, and the EIA and AA assessment deficiencies need to be addressed. We hold the position in the first instance that section 34(12) applies and as such the Board should invalidate/ refuse the decision to grant this planning amendment via relevant action.

Decision

on Summer 2023 Coordination Parameters

at Dublin Airport

Commission Paper 5/2022

30 September 2022

Commission for Aviation Regulation

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1. Executive Summary

1.1 The Commission for Aviation Regulation is the authority charged with declaring coordination parameters at coordinated Irish Airports.[1] This paper sets out our Decision on the Dublin Airport parameters for the Summer 2023 ('S23') season, which runs from 26 March to 29 October, 2023.[2] This declaration of the parameters for S23 is made in line with the IATA worldwide slot calendar.[3] The coordination parameters are set out in the Appendix and have been provided to the Coordinator.

1.2 Our Decision on the Summer 2023 parameters is to make the following changes relative the Summer 2022 ('S22') parameters:

- Implement 'Wishlist 2' hourly runway capacity ('R60') limits, which involves a range of increases in the declared runway limits in the day hours due primarily to the new capacity provided by the North Runway.
- Update the within-hour 10 minute ('R10') runway limits to reflect dual parallel runway operations.
- Stand counts are updated to reflect expected changes by apron area relative to Summer 2022. Otherwise, the form of this parameter is unchanged from S22.
- Terminal 2 rolling hourly parameter for departures is reduced to 3,600 passengers, with an offsetting reduced load factor assumption of 85% rather than 95%.
- Maintain the referral parameters on Terminal 2 Check-in desks and US Preclearance.

1.3 This Decision is in line with our Draft Decision. In arriving at our Decision, we have examined and relied on a large body of evidence. We commissioned fast time simulation modelling of the airfield to assess a range of scenarios relating to potential increases in the runway limits. This work was carried out by Egis. The assessment of these scenarios takes the form of a comparison of a range of airfield metrics. The results from this assessment were shared with the Coordination Committee, and the final report is published alongside this document.

1.4 We currently make no changes to the R60 runway parameters in the night hours, meaning that no more night flights (between 2200z and 0600z) would be possible on the pre-existing Southern Runway than was possible before the Northern Runway was complete. We also assume that the North Runway is itself unavailable during this period, and the single runway capacity is available only. These issues and our overview of potential Operating Restrictions to take account of is in Section 3.

1.5 We have considered other evidence with which we have been presented, or which we sought. This evidence includes modelling work conducted by Dublin Airport, and its consultants.

1.6 Our Decision follows the advice received from the Coordination Committee, when voting

[1] See Aviation Regulation Act, 2001 and the Slot Allocation Regulations – Council Regulation (EEC) No 95/93 on common rules for the allocation of slots at Community airports as amended by Regulation (EC) No 793/2004.
[2] As per the worldwide slot calendar: https://www.iata.org/contentassets/4ede2aabfcc14a55919e468054d714fe/calendar-coordination-activities.pdf
[3] See also the Worldwide Airport Slot Guidelines - https://www.iata.org/en/policy/slots/slot-guidelines/

rights are assigned in line with the Coordination Committee constitution. The Coordination Committee comprises Dublin Airport, the Air Navigation Service Provider (the IAA), and is open to all airlines operating at Dublin Airport.

1.7 We received 12 responses to our Draft Decision, from Aer Lingus, DHL, Dublin Airport, FEDEX, FTAI, Liam O' Gradaigh, Michael O' Rourke, Dr. Niamh Maher, Pearse Sutton, Ryanair, Stephen Smyth, and UPS. These responses are published alongside this document and were considered in reaching this decision.

2. Background

Legislation

2.1 Section 8(1) of the Aviation Regulation Act, 2001, states that the Commission for Aviation Regulation (CAR) is the competent authority in Ireland for the purposes of Council Regulation (EEC) No. 95/93, as amended ("the Slot Regulation"). The Commission is therefore responsible for:

- The designation of the Coordination status of Irish airports.
- Appointing a qualified schedules facilitator or coordinator, as appropriate, at airports which have been designated as Schedules Facilitated or Coordinated.
- The determination of coordination parameters at Coordinated airports in line with Article 6 of the Slot Regulation, taking account of relevant technical, operational and environmental constraints as well as any changes thereto.
- Deciding whether to approve Local Guidelines proposed by the Coordination Committee.

2.2 Dublin Airport is designated as Coordinated by the Commission. Airport Coordination Limited (ACL) is the appointed coordinator. No other airport in Ireland has been designated as either Schedules Facilitated or Coordinated.

2.3 Slot allocation is an administrative process by which a scarce resource, namely slots, are allocated according to an independently coordinated process, amongst those air carriers who would like to operate at a Coordinated airport such as Dublin Airport. Slots are allocated to air carriers for flight planning purposes.

2.4 A slot means the permission given by a coordinator in accordance with the Slot Regulation to use the full range of airport infrastructure necessary to operate a particular air service at a Coordinated airport on a specific date and time. Air carriers must apply to the coordinator for slots and may be sanctioned where, for example, they operate without an appropriate slot, or operate repeatedly at a time different to the allocated slot. The number of slots available to be allocated is determined by the coordination parameters in place. The coordination parameters are defined as the expression in operational terms of all the capacity available for slot allocation at an airport during each coordination period, reflecting technical, operational and environmental factors that affect the performance of the airport infrastructure and its different sub systems.

2.5 Where an air carrier is allocated a series of slots and fulfils certain criteria in relation to the use of that series, it is entitled under the Slot Regulation to retain the series in the next scheduling season (termed a 'historic' slot entitlement). Slots may be traded between carriers, including for monetary consideration.

2.6 Under Article 5 of the Slot Regulation, one of the roles of the Coordination Committee is to advise the Commission on the coordination parameters to be determined in accordance with Article 6. As per Article 5(3), the Commission is invited to attend Coordination Committee meetings as an observer.

2.7 Article 6(1) states that the determination of the parameters '*shall be based on an objective*

analysis of the possibilities of accommodating the air traffic, taking into account the different types of traffic at the airport, the airspace congestion likely to occur during the coordination period and the capacity situation'. Thus, the determination of the parameters is a forward-looking projection in which we must take account of expected demand, capacity (including airspace capacity), and relevant constraining factors, during S23, in an objective manner. This is primarily assessed through simulations of the operation of the forecast S23 flight schedule at the airport, under different permutations of potential capacity parameters which are being considered within the Coordination Committee.

2.8 The coordination parameters establish the scheduling limits that can be coordinated to, over a specified period of time. They are reviewed twice a year. The ethos underpinning the establishment of coordination parameters is set out in article 6(3) of the Slot Regulation which details the required interaction between the Commission and the Coordination Committee:

"*The determination of the parameters and the methodology used as well as any changes thereto shall be discussed in detail within the coordination committee with a view to increasing the capacity and number of slots available for allocation, before a final decision on the parameters for slot allocation is taken. All relevant documents shall be made available on request to interested parties."*

2.9 In that regard, we consider that in taking account of relevant constraints when drawing up a capacity declaration, we ought to tend towards a maximal rather than minimal approach as regards declaring the airport capacity parameters. This is because of the requirement that discussion within the coordination committee is "*with a view to increasing the capacity and number of slots available for allocation*." This framing of the determination of the parameters should be given further weight where a parameter is expected to have a constraining effect on demand, given that Article 6(1) requires the determination to be based on the '*possibilities of accommodating the air traffic'.*

2.10 Thus, one considers the parameters from the perspective of increasing capacity at first instance. The coordination parameters represent the maximum capacity available for allocation considering the functional limitations at the airport such as runway, apron, terminal, airspace and environmental restrictions. The determination of parameters considers each sub-system from the perspective of its maximum capacity at a given level of service. Certain sub-components of the infrastructure will generally have more capacity than others in a given season. A capacity reduction that occurs may be planned for within the normal seasonal flight planning timelines or as the need arises. Establishing the parameters is a step prior to the initial application by air carrier for the allocation of slots.

2.11 Subsequent sections of this paper detail how these requirements were met by the Commission.

Coordination Committee Engagement Process

2.12 To help inform the Coordination Committee and, ultimately, the Commission's decision on the parameters, we engaged Egis to carry out simulations of the expected flight schedule for S23, using the Fast Time Simulation model of the apron, airfield, and airspace in the Dublin Airport TMA (Terminal Manoeuvring Area). This model was originally developed by Egis for the Commission in 2017 and has been used for various simulation exercises since, both in relation to the determination of coordination parameters and also to assess the likely impact of airfield projects proposed by Dublin Airport as part of the Airport Charges determination process.

2.13 Prior to running the simulations, Egis re-validated the model. This involves simulating the flight schedule on a recent day of operations, and comparing the simulated airfield metrics (such as taxi time durations and runway throughput) with actual observed metrics on the same day. If necessary, adjustments are made to the model and the process is repeated until a satisfactory result is obtained whereby the model is replicating the actual operation with a sufficient degree of accuracy.

2.14 Airlines were asked to submit growth plans for Summer 2023 to ACL. Analysis carried out by ACL indicated that significant increases in the runway limits would be required to ensure that these plans could be fully facilitated.

2.15 Dublin Airport proposed a number of changes to the hourly runway limits relative to S22, informed by the analysis carried out by ACL, but reduced in scope.[4] This set of changes, summarised in Table 2.1, is termed Summer 2023 Wishlist 1, to distinguish it from variations subsequently proposed by other Coordination Committee members. There was no proposal for any changes in runway capacity in the hours not listed in Table 2.1.

2.16 Dublin Airport noted the following in relation to its proposal:

- With the North Runway available, the primary capacity constraint shifts from runway to stands/gates. Proposed additional aircraft movements must fit on available stands, which is also necessary to enable modelling of the flight schedule through the full airfield and thus properly test the impact of potential runway limits.

- For the first season capacity release of the North Runway, it is prudent not to increase capacity by more than c10% in the busiest hours.

Table 2.1: Dublin Airport's Proposal for Summer 2023: Wishlist 1

UTC Hour*	Departures	Arrivals	Totals
0600	+4		+2
0900			+4
1000			+3
1100		+2	+3
1200		+1	+3
1300	+2		+4
1600		+2	+4
1700			+2
1800			+3
2100			+6
Total	**+6**	**+5**	**+34**

Source: Coordination Committee
**During the Summer season, Local time is UTC + 1 hour*

[4] All references to times or hours are in UTC 24 hour format, unless stated otherwise. Where a reference is made to a particular hour, such as the 0500z hour, this refers to the time period one hour in length commencing from the stated time. To give an example, the 0500z hour spans from 5 am to 6 am UTC.
In each hour, a requested departure slot must not bust the hourly Departures limit or the hourly Totals limit, while a requested arrival slot must not bust the hourly Arrivals limit or the hourly Totals limit.

2.17 Information provided by airlines was used to construct an anticipated flight schedule on a busy day in Summer 2023, 'the S23 Schedule'. The S23 Schedule was based on the flight schedule on 29 July 2022, with the expected growth for Summer 2023 added in.

2.18 The operation of the S23 Schedule was simulated by Egis. To isolate the effect of a potential decision to adjust the parameters from those currently in effect to those proposed under Wishlist 1, the Commission asked Egis to coordinate the S23 Schedule according to both the proposed Summer 2023 Wishlist 1 limits, and alternatively the current Summer 2022 runway limits. Comparisons were provided between simulated taxi times, ground delay and runway holding delay. Further detail and results of this analysis is set out in Section 3.

2.19 Dublin Airport proposed a reduction in the limit on Terminal 2 departures based on updated security processor capacity analysis. A reduction in the Terminal 2 load factor from 95% to 85% was also proposed by Dublin Airport to reflect that, with the 2019 traffic profile, c15% of T2 passengers were transfer and thus do not pass through the security processor. It was noted that these adjustments would offset in relation to the 'at-the-gate' capacity, such that overall, it would reduce by 2.5%. No other changes were proposed relative to the Summer 2022 limits on terminals or referral limits (except updating the stand count to reflect expected changes in the count since Summer 2022).

2.20 The pre-meeting of the Coordination Committee took place on 9 August 2022. Ahead of the initial meeting, Egis circulated the simulation modelling results. Dublin Airport also circulated various pieces of analysis and modelling results to Committee members ahead of the initial meeting, namely:

- Simulation modelling carried out for Dublin Airport by ARUP.
- An update on actual airfield performance during Summer 2022, prospective projects expected to be delivered for Summer 2023, projects that are expected to be under construction in Summer 2023, and potential operational changes which may be in place for Summer 2023.
- An update on the North Runway, the planned CONOPS (concept of operations) and the Air Traffic Control transition plan.
- An update from ACL containing an overview of Summer 2022 to date and details of the full collated wishlist demand for Summer 2023.
- Proposed coordination parameters for Summer 2023.

2.21 The Coordination Committee met again on 26 August to finalise its advice for the Commission.

2.22 The simulations were updated to reflect a revised proposal for the R10 limits developed between Dublin Airport and the Irish Aviation Authority Air Navigation Services Provider (IAA ANSP). Two additional scenarios were also simulated, Wishlist 2 and Wishlist 3, based on requests from Coordination Committee members. These were both variations of the original Wishlist 1 proposal:

- Wishlist 2 included additional capacity of 2 departures and 2 totals in the 0600z hour, and 2 totals in the 1400z hour.
- Conversely, Wishlist 3 excluded any capacity increases in 0600z.

Table 2.2: Summer 2023 Wishlist 2 & 3

	Wishlist 2			Wishlist 3*		
UTC Hour	Departures	Arrivals	Totals	Departures	Arrivals	Totals
0600	+6		+4			
0900			+4			+4
1000			+3			+3
1100		+2	+3		+2	+3
1200		+1	+3		+1	+3
1300	+2		+4	+2		+4
1400			+2			+2
1600		+2	+4		+2	+4
1700			+2			+2
1800			+3			+3
2100			+6			+6
Total	**8**	**5**	**38**	**2**	**5**	**34**

*Source: Coordination Committee. *Wishlist 3 was modelled by Egis without the additions to 1400z, as we understood the request from the relevant CC member. The difference, in any case, primarily relates to the earlier 0600z hour.*

2.23 The final results of the Egis simulations were published alongside the Draft Decision.

Coordination Committee Vote

2.24 Following the presentation of all materials circulated by the respective parties, Coordination Committee members voted on the parameter options. Voting rights for Committee members are set out in the Coordination Committee constitution. A set number of votes are allocated to Dublin Airport and the IAA ANSP, with the rest allocated to airlines based on the number of movements flown at Dublin in the preceding year. Only those present can vote. A letter from the Committee to CAR is published alongside this paper.

2.25 There was some disagreement among the Coordination Committee on the appropriate allocation of votes, with some favouring the use of 2019 actual movements or the slot historics list for 2021, rather than 2021 actual movements. This was on the basis that 2021 was an abnormal year, and exceptional rules for Justified non-use of Slots were in place during 2021 as a result of Covid-19. The Committee, in its published advice, has provided the results on the basis of all three of these scenarios.

2.26 There were also mixed views on the appropriate runway parameters with Dublin Airport, Delta, Ryanair, and the IAA ANSP supporting Wishlist 2 in full, while other airlines generally supported various hourly mixes of retaining S22 capacity, Wishlist 1, and Wishlist 3.

2.27 In most hours, the voting outcome is insensitive to which permutation of voting rights is used, the exceptions being the 0600z and 2100z hours. In the 0600z hour, the use of the 2019 voting rights results in the S22 option being the most popular, while using the 2021 actual movements or the 2021 slot historics list results in a majority for Wishlist 2. For the 2100 hour, the use of the 2019 voting rights results in a majority for Wishlist 1, and the use of the 2021 actual movements or the 2021 slot historics list results in a majority for Wishlist 2. There are no other differences in the voting outcomes for other hours.

2.28 No changes were proposed within the Committee in relation to any hour other than those listed below in Table 2.3.

2.29 While we understand the rationale for not solely relying on actual movements for 2021, the Coordination Committee constitution is clear that the votes should be allocated based on the flights flown in the previous year. Therefore, in the absence of unanimous agreement among the Coordination Committee for an alternative allocation of voting rights, we consider it appropriate to look at the 2021 voting rights as the primary reference point. The votes are laid out in Table 2.3 based on these voting rights. This shows that, for each hour, Wishlist 2 has received the most votes.

2.30 It is important to note that we consider the voting process to be an indicative part of the Coordination Committee's advice to CAR, rather than corresponding to a direct "election" of the parameters. As part of the process, we have sought to take into account all positions set out by Coordination Committee members as well as any associated comments or evidence relevant to the parameter determination.

Table 2.3: Coordination Committee votes on proposed changes to hourly runway limits

Member	Votes	0600	0900	1000	1100	1200	1300	1400	1600	1700	1800	2100
Aer Lingus	255	S22	WL1	WL1	WL1	WL1	WL1	S22	WL1	WL1	WL1	WL1
Air Canada	3	X	X	X	X	X	X	X	X	X	X	X
Air France	19	X	X	X	X	X	X	X	X	X	X	X
IAA ANSP	20	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2
British Airways	30	S22	S22	S22	S22	WL1	WL1	S22	WL1	WL1	WL1	WL1
CityJet	2	S22	WL1	WL1	WL1	WL1	WL1	S22	WL1	WL1	WL1	WL1
Daa	40	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2
Delta	14	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2
DHL	4	S22	S22	S22	S22	S22	S22	S22	S22	S22	S22	WL1
Emerald	0	WL2	WL1	WL1	WL1	WL1	WL1	WL1	WL1	WL1	WL1	WL1
FedEx	7	WL2	X	X	X	X	X	X	X	X	X	WL1
KLM	27	X	X	X	X	X	X	X	X	X	X	X
Lufthansa	28	WL3	WL3	WL3	WL3	WL3	WL3	WL3	WL3	WL3	WL3	WL3
Ryanair	502	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2	WL2
Swiss	9	S22	WL3	WL3	WL3	WL3	WL3	S22	WL3	WL3	WL3	S22
TUI	3	WL1	WL1	WL1	WL1	WL1	WL1	WL1	WL1	WL1	WL1	WL1
UPS	37	S22	S22	S22	S22	WL3	WL3	WL3	WL3	WL3	WL3	WL3
WL1		**3**	**260**	**260**	**260**	**290**	**290**	**3**	**290**	**290**	**290**	**301**
WL2		**583**	**576**	**576**	**576**	**576**	**576**	**576**	**576**	**576**	**576**	**576**
WL3		**28**	**37**	**37**	**37**	**74**	**74**	**65**	**74**	**74**	**74**	**65**
S22		**337**	**71**	**71**	**71**	**4**	**4**	**300**	**4**	**4**	**4**	**9**
Abstain		**49**	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**56**	**49**

Source: Coordination Committee. Totals may not tally exactly due to rounding of voting rights. 'X' is abstention. Voting rights based on 2021 actual movements.

2.31 The Committee then voted on Dublin Airport's proposal to adjust the limits for Terminal 2. No other proposal was made in relation to other changes to the terminal building parameters.

Table 2.4: Coordination Committee votes on proposed Terminal limits

Member	Votes	Yes	No	Abstain
Aer Lingus	255	Y		
Air Canada	3			Y
Air France	19			Y
IAA ANSP	20			Y
British Airways	30			Y
CityJet	2	Y		
Daa	40	Y		
Delta	14	Y		
DHL	4			Y
Emerald	0	Y		
FedEx	7			Y
Lufthansa	28			Y
KLM	27			Y
Ryanair	502			Y
Swiss	9			Y
TUI	3	Y		
UPS	37			Y
Total		**314**	**0**	**686**

Source: Coordination Committee

2.32 The advice from the Coordination Committee is therefore to implement the Terminal 2 proposal by Dublin Airport, with no opposition to this proposal.

3. Airfield Coordination Parameters

3.1 This section addresses, in turn:

- Runway parameters during the day time hours.
- Runway parameters during the night time hours.
- Stand parameters.

3.2 In line with the majority advice from the Coordination Committee and the Draft Decision, we have decided to implement the Wishlist 2 adjustments to the S22 hourly runway limits ('R60'), as set out in Table 3.1.

Table 3.1: Changes to runway limits from Summer 2022

UTC Hour	Departures	Arrivals	Totals
0600	+6		+4
0900			+4
1000			+3
1100		+2	+3
1200		+1	+3
1300	+2		+4
1400			+2
1600		+2	+4
1700			+2
1800			+3
2100			+6
Total	**+8**	**+5**	**+38**

Source: CAR

3.3 We have also adjusted the 10 minute runway limits ('R10') in line with the proposal of Dublin Airport and IAA ANSP, to which there were no objections.

3.4 We retain the stand parameter as a hard constraint. Where demand for stands exceeds supply as per the count in the appendix, movements are referred to Dublin Airport for detailed assessment. If the issue cannot be resolved, a slot will not be allocated.

Runway Capacity in Day Hours

3.5 In this subsection, we address runway capacity in the hours 0600z to 2200z or 7am to 11pm local time.

Egis Airfield Modelling

3.6 As described above, Egis first validated the airfield model and then simulated the S23 flight schedule under the various sets of options for the hourly runway limits being considered by the Coordination Committee, namely:

- Rolling forward the S22 limits, i.e. making no changes to the limits compared to those in place for S22.
- Implementing the Wishlist 1 adjustments to the S22 limits.
- Implementing the Wishlist 2 adjustments to the S22 limits.
- Implementing the Wishlist 3 adjustments to the S22 limits.

3.7 The model validation process was based on 18 April 2022. On this day 100% of operations used Runway 28L.

3.8 The simulated metrics (taxi out times, runway throughput, counts of aircraft coming on block, off block, lifting off and touching down) show a close match with the actual data both in magnitude and daily profile. Across the day, the difference between the average simulated and average real taxi out time is 32 seconds, with the simulation generating slightly higher taxi times than were observed in reality. This again demonstrated the ability of the model to accurately replicate the real operation of a given flight schedule.

3.9 Efficient towing of aircraft occurs in the model. Taxiway, towing, runway, and runway exit usage restrictions and patterns have been implemented in the model. Given the close match in the model validation outputs, it is our view that no significant airfield capacity affecting element has been omitted from the model.

3.10 Taxi out time measures the time elapsed from the aircraft coming off blocks until it crosses the runway stopbar to begin its take-off roll. Departure ground delay is the accumulation of all delay experienced in the same period, i.e. all components of taxi-out time other than unimpeded taxi-time. The estimated effect of proposed airfield capacity increases on these two closely related metrics is, in our view, the best way to assess the physical and operational ability of the airfield to deliver a flight schedule.

3.11 Egis first modelled two scenarios to compare the impact of declaring increased capacity in line with the Wishlist 1 proposal, relative to maintaining S22 capacity limits. In both cases it is assumed that the increased demand will materialise for S23. Both scenarios are based on the flight schedule on 29 July 2022, which was an already busy day prior to the addition of any new services planned by the carriers for S23.

3.12 There are over 100 new movements in the S23 Schedule. Most of these movements could be accommodated at the times requested without any changes to the runway limits. To isolate the effect of a decision to implement the various wishlists relative to maintaining the Summer 2022 limits, we asked Egis to simulate the S22 Schedule coordinated according to the wishlist scenarios and separately according to a baseline scenario in which no changes are made to the limits. This process isolates the effect of a decision to increase the parameters.

3.13 We have previously observed a general pattern whereby airlines may accept sub-optimal slots (whether in relation to timing, series fragmentation, or both) in order to meet demand for an operation. In order to capture this trend, our baseline scenario assumes that this redistribution effect occurs, with these new services operating at the nearest available time in the simulation.

3.14 Table 3.2 summarises the final results of the Wishlist 1 and S22 limits scenario simulations, overall and in terms of local averages across various parts of the day, as provided to the Coordination Committee ahead of the final meeting. Further details are set out in the Egis

simulations published alongside. For all of the final simulation scenarios, the updated R10 limits are included as proposed by Dublin Airport and IAA ANSP. These limits have the effect of preventing within-hour bunching.

Table 3.2: Departure Taxi Out Time

Time (UTC)	S23 Wishlist 1 scenario	S22 limits scenario	Difference
Average (0500-0700)	00:16:20	00:15:58	+ 00:00:22
Average (0700-1400)	00:14:46	00:14:52	- 00:00:06
Average (1400-1800)	00:14:20	00:14:58	- 00:00:38
Average (1800-2300)	00:13:02	00:13:13	-00:00:11
Daily average	00:14:13	00:14:29	- 00:00:16
Peak	00:18:19	00:17:41	+ 00:00:38

Source: Egis, Slide 21. Taxi times in minutes and seconds.

Average times are based on a rolling 10 minute window. Peak times refer to the window with the highest average value. Values are in hours, minutes and seconds.

3.15 In summary, relative to maintaining the Summer 2022 limits unchanged, S23 Wishlist 1 is expected to lead to:

- No material impact on taxi-out times on average across the day.
- An increase in average taxi out time of just 22 seconds between 0500z to 0700z; within this period, an increase in the peak taxi time of approximately 40 seconds. On the other hand, retaining the S22 limits is likely to lead to a flatter first wave with an extended duration into the shoulder hours, particularly the 0400z hour.
- Better preservation of schedule firebreaks, specifically, in the 0700z, 0800z, 1500z, and 2000z hours.
- Slightly lower average taxi out times between 1400z to 1800z, likely linked to the preservation of the firebreak in the 1500z hour.
- No material impact on taxi-in times.

3.16 Egis simulated two additional scenarios based on requests from coordination committee members. These were also presented at the Meeting on 26 August. The variations relative to Wishlist 1 were as follows:

- Wishlist 2 included additional capacity of +2 departures and +2 totals in the 0600z hour, and +2 totals in the 1400z hour.
- Conversely, Wishlist 3 excluded any capacity increases in 0600z.

3.17 Thus, the primary difference relates to the 0600z hour. The results for the broader morning departures wave (0400z to 0700z hours) are set out in Table 3.3.

Table 3.3: Departure Taxi out Time

Time (UTC)	S23 Wishlist 2	Difference to S22 Scenario	S23 Wishlist 3	Difference to S22 Scenario
Morning wave peak	00:18:51	+00:01:10	00:16:23	-00:01:18
Morning wave average	00:14:47	-00:00:17	00:14:36	-00:00:28

Source: Egis.

Average times are based on a rolling 10 minute window. Peak times refer to the window with the highest average value. Values are in hours, minutes and seconds.

3.18 Thus, on average across the morning departures wave, departure taxi out time seems to be insensitive to either adding the additional movements, or not declaring additional capacity in 0600z. That is, the timing of movements impacts the peakiness within the period, but this does not have a cumulative effect in terms of increasing or decreasing overall delay, because it is offset by the duration of the wave.

3.19 More movements within 0600z increase the absolute peak by 1 minute 10 seconds compared to the S22 scenario baseline, while fewer movements within 0600z decrease this peak by 1 minute 18 seconds.

Other Modelling

3.20 Dublin Airport commissioned ARUP to carry out simulation modelling on its behalf, which was also presented to the Coordination Committee. Like the Egis modelling, the ARUP modelling includes the runway, taxiways and apron. The ARUP models display similar results to Egis for the scenarios they modelled, which included all three wishlists. ARUP produced its simulations using CAST software.

3.21 We consider that this provides a useful cross-check and cross-validation of both Egis' and ARUP simulation modelling.

Taxi Out times and On Time Performance (OTP) in Summer 2022

3.22 At the Coordination Committee pre-meet, Dublin Airport provided an update on outturn 2022 operational performance (up to July inclusive) relative to 2019 performance.

3.23 On Time Performance (OTP)[5] is worse than Summer 2019, with arrival OTP down 14% and departure OTP down 15%.

3.24 Average taxi-out times have improved over the full day relative to Summer 2019, but the first wave average increased by one minute. Overall, the taxi-out times are in line with the performance seen in Summer 2019. Overall taxi-in times did not change significantly compared to Summer 2019, with an increase of 15 seconds for the average taxi-in for a full day, but showed a decrease of 3 minutes for the first wave average taxi-in time.

3.25 When previously considering proposed capacity increases for the forthcoming season, we considered the trends in outturn performance relative to previous years, to get sense of how the airfield is performing under the prevailing limits. However, with the impact of COVID-19

[5] An air service is defined as on-time for the purposes of OTP when it arrives within 15 minutes of the scheduled arrival time or departs within 15 minutes of the scheduled departure time.

on the performance for S20, S21, and S22, this is less relevant than for previous capacity declarations.

3.26 S20 and S21 saw traffic levels far below what we can expect for S23. S22, meanwhile, has been heavily impacted by the challenges faced by operational stakeholders in ramping up the industry following the two-year period impacted by COVID-19. This has led to poor OTP due to factors such as En Route ATFM delay and aircraft rotational delay. We expect that the situation will stabilise by S23 as issues causing the current poor performance are addressed.

3.27 Additionally, the North Runway is a major infrastructural change at the airport which will change operations significantly. It is unlikely that the performance trends of S22, before the North Runway was operational, are indicative of what to expect in S23.

Infrastructural developments

3.28 There are a number of infrastructural developments which are already completed or expected to be completed ahead of Summer 2023, specifically:

- North Runway.
- Realignment of MRO Stands.
- West Apron redesign to provide additional stands.
- Redevelopment of the Hangar 1/Hangar 2 stands.
- Gate Post 9.
- Widening of the Pier 2 and Pier 3 underpasses.
- Critical Taxiway North (expected completion in Q2 2023).
- Runway 16/34 LVP lighting.
- Terminal 1 and 2 Hold Baggage Screening.

3.29 Furthermore, there are a number of projects which are expected to be ongoing during S23 which will require operational changes. Where relevant (i.e. where they relate to aircraft traffic as opposed to vehicle traffic), these changes have been implemented in the Egis simulations. This includes:

- For construction of Apron 5H, Light Aircraft Parking B is closed and GA parking is moved to the northern section of the West Apron.
- For the critical taxiway project, taxiways F-Outer and P1 are closed.
- Widening of taxiways Z/B1 to facilitate dual code E operations, which requires the closure of B1.

Operational Developments

3.30 Minimum aircraft separations are generally assumed to be in line with previous simulations. Departure-departure separation has been kept at a minimum of 84 seconds for Runway 28L

departures. Arrival-arrival separation is at a minimum of 3.5 Nautical Miles. Arrival-departure-arrival separation is kept at a minimum of 5.5 Nautical Miles.

3.31 The North Runway is assumed to be operational in line with the planned Concept of Operations (CONOPS) for S23, which in turn is significantly driven by condition 3 of its Planning Permission. As in previous seasons, the capacity is declared based on westerly operations. Thus, our modelling assumes the following:

- Segregated dual runway operations during the day, with Runway 28R for departures and Runway 28L for arrivals.

- Single runway operations on Runway 28L for all aircraft movements during the night period (which is discussed separately below). That is, the North Runway is in use only between 0600z to 2200z (7am to 11pm local).

3.32 In line with Condition 4 of the North Runway planning permission, which limits the use of the crosswind runway to *'essential occasional use'*, our modelling assumes no use of the crosswind runway 16/34 as an active runway.

CAR Draft Decision

3.33 In the Draft Decision, we noted that we are required to review the parameters with a view to increasing the capacity and number of slots available for allocation, based on an objective analysis of the possibilities of accommodating the air traffic. On that basis, the Commission's draft decision was to amend the hourly runway limits in accordance with Wishlist 2. The reasons we provided were as follows:

- It is clear from the Egis simulations that the additional capacity proposed under Wishlist 2 can be accommodated by the parallel runway system without any material causative impact on delay.

- Based on the Coordination Committee constitution, the advice of the Committee to CAR is to declare runway limits in line with Wishlist 2.

- With the non-availability of the North Runway during the peak departure hour at 0500z, that hour will remain constrained. Capacity in the 0600z hour will relieve that constraint, and also likely reduce the number of night operations in the 0400z hour.

- Concerns raised by certain committee members, particularly in relation to the release of capacity at 0600z, in our view relate primarily to matters other than appropriate runway limits for S23.

3.34 In the Draft Decision, we noted that the simulation results suggest that additional capacity in excess of Wishlist 2 could be handled by the runways/taxiways. Nonetheless, we agreed with Dublin Airport that it is prudent to limit the initial North Runway capacity release to preclude potentially excessive bunching of the schedule, as the relevant operational stakeholders become acclimatised to the changed operation. We also noted that further additional capacity is not likely required to accommodate the air traffic.

3.35 Based on observations of the model, dual runway operations will work much better than single runway, with improved traffic flows. The simulation results show that average delay/taxi out times are insensitive to incremental movements as per the various wishlists.

Taxi times vary depending on the timing of movements, but this does not significantly accumulate delay. That result is materially different to when we last carried out simulations, ahead of the S20 season, when the single runway operation was subject to a high level of runway capacity constraints and average taxi times were sensitive to incremental movements. Ultimately, for S20, the runway limits were set on the basis of a modelled peak taxi out time of over 26 minutes at 0630z. The equivalent figure under Wishlist 2 for S23 is 19 minutes.

3.36 We stated that the primary reference point for the Coordination Committee voting rights should be as specified in the constitution. On that basis, the advice to CAR is to implement Wishlist 2. Wishlist 2 was supported in full by both the airport operator and the Air Navigation Services Provider, as well as by Ryanair and Delta.

3.37 We note the opposition among some airlines, who supported various hourly mixes of retaining the S22 limits, Wishlist 1 and Wishlist 3. Based on the comments made, which are summarised in the appendix of the letter from the Committee, the primary concern relates to stand capacity, particularly in the 0600z hour and in the context of poor OTP in S22. However, we consider that this relates primarily to the stand parameter, which is discussed below, rather than being a reason to limit runway capacity. The purpose of setting limits on specific parameters is to capture the capacity limits of different processors separately, rather than, for example, slots being refused due to R60 where the real constraint is stands elsewhere on the apron.

3.38 There was also a concern raised as to whether the security processor will be sufficiently staffed in time for S23. We stated that this relates to the passenger terminal capacity limits, which are discussed in Section 4, rather than the runway limits.

3.39 Finally, as noted above, we stated that we do not believe that the Wishlist 2 adjustments to the runway limits are likely to significantly impact OTP in S23, or that 2022 OTP is a good guide to likely OTP in 2023.

3.40 On that basis, and given the approach to the determination of parameters required by Article 6, we proposed to implement the Wishlist 2 adjustments to the runway parameters.

Submissions Received on Draft Decision

3.41 Aer Lingus states that it has serious concerns that the release of extra capacity as proposed in the Draft Decision has the potential to significantly undermine hub operations for Aer Lingus and its customers. It lists the following concerns:

- Inadequate stands for more based aircraft.
- The US Preclearance facility being full at certain times of the day.
- The capacity of the central search facility to handle significantly more passengers for first-wave departures.
- Stand Allocation Rules which Aer Lingus consider require revision to support customers making connections at Dublin Airport.

3.42 Aer Lingus states that the new runway will mean the bottleneck at the airport will now become the stand availability. Specifically, it considers that Dublin Airport's own projection of stand demand for S23 presents an '*alarming*' picture for a based operator such as Aer Lingus in a number of distinct areas. It is therefore concerning to Aer Lingus that any new departure

slots in the morning wave would be added without this infrastructural gap being addressed as it is unclear where these aircraft would park.

3.43 Aer Lingus believes that the capacity must be looked at in the round, because an airport slot (as defined in the Slot Regulation) includes "the full range of airport infrastructure necessary to operate an air service at a coordinated airport". Aer Lingus states that, as stand infrastructure will be the '*overwhelming constraint*' at the airport, it is '*odd*' that our primary concern for the S23 declaration is to examine runway capacity.

3.44 Aer Lingus states that the addition of extra departure slots in the early morning wave will result in potentially 1,500 extra passengers being required to go through the central search facilities at terminals 1 and 2 combined. It considers that Dublin Airport has been unable to handle the peak S22 volumes, thus it is an '*act of folly*' to present them with a significantly larger task in S23. Aer Lingus states that it is not alone in its concerns about the release of extra morning slots with two-thirds of the airlines present at the CC meeting voting against the release of capacity.

3.45 Aer Lingus states that stand planning requires Piers 3 and 4 to run at 100% capacity at times. On the other hand, it notes that the capacity at Pier 1 and 2 is in the region of 50%. Aer Lingus believes that it is necessary that the stands at Dublin Airport be optimised and balanced across the campus such that the minimum connection time improves at the airport. Aer Lingus suggests reallocating carriers which do not connect at Dublin nor operate to the United States away from the South Apron, Pier 3 and Pier 4 at peak demand times.

3.46 Aer Lingus states that, as a hub operator at Dublin Airport, it requires that its fleet are parked in close proximity to each other for the hub to function. The resultant minimum connection times (MCTs) enable the hub to function efficiently and drive more traffic through the airport adding value to the economy and stimulating sustainable employment growth. It outlines that MCTs at Dublin Airport exceed those at other airports in Europe.

3.47 Aer Lingus states that, as Dublin Airport demonstrated to the Coordination Committee, the US Preclearance facility is currently full until late morning and it is unclear to Aer Lingus how any extra runway slots, were they to be declared by the Commission, could be allocated to an operation requiring use of the facility before 1300z assuming that all carriers using the facility in the current S22 season retain and re-apply for their historic slot rights.

3.48 Aer Lingus considers that there is a lack of forward planning in relation to the impact that the S23 capacity declaration could have on future seasons. It notes that Dublin Airport has recently submitted an application for planning permission for an underpass from Pier 3 to the West Apron which, if it proceeds in 2024, will require the withdrawal of stands on Pier 3 from service in S24.

3.49 Aer Lingus states that there will be an '*acute deficit'* of nightstands if the extra morning slots are declared in S23 and further untenable pressure on Pier 3 and Pier 4 demand if the stand rules are not revised should extra slots be released after the first wave. Aer Lingus therefore considers it imperative that any release of capacity at Dublin Airport is done in parallel with a requirement for a review of the stand planning assignment priorities at Dublin Airport to further enable and promote hub connectivity.

3.50 Ryanair supports the Draft Decision, which it describes as striking a relatively conservative balance between facilitating growth at Dublin Airport and the sensible operational ramp up of the North Runway. It particularly welcomes additional capacity in the 0600z and 1400z

hours as per Wishlist 2, which will support Ryanair's planned growth at Dublin Airport, as well as enhanced connectivity, economic growth and local jobs.

CAR Final Decision

3.51 We note the support of Ryanair for the Draft Decision as proposed.

3.52 Aer Lingus' views are consistent with those previously expressed within the Coordination Committee. These views were considered within the Coordination Committee and in the Draft Decision as discussed above. While we agree with Aer Lingus that a slot represents permission to use the full range of required airport infrastructure, we disagree with the apparent suggestion that the runway parameters should be used as a proxy to address what Aer Lingus considers to be constraints elsewhere. As noted above, constraining factors are captured individually within the parameters, with the overall slot capacity available generated collectively by the combination of individual parameters.

3.53 We disagree that it is '*odd*' that significant focus would be placed on runway capacity ahead of a season in which there is a fundamental change in runway infrastructure. The Slot Regulation specifically references changes in relevant constraining factors. The stand parameter is unchanged from S22 in the context of little change to stand capacity, other than updates to the relevant counts- the runway capacity is the primary change in constraining factors relative to S22.

3.54 We suggest that, if parties consider that the appropriate capacity of the processors referenced by Aer Lingus is less than currently declared, or the parameter is structured in a way which should be changed, they should make specific proposals for future seasons in relation to these parameters, as set out in the Draft Decision in the relevant subsections.

3.55 As set out in the Draft Decision, if the proposed underpass or other infrastructure development projects warrant adjustments to the capacity parameters in Summer 2024, this properly falls to be considered within the S24 declaration.

Runway Capacity in Night Hours

3.56 As set out in Section 2, when determining coordination parameters as per Article 6 of the Slot Regulation, we are required to take account of relevant technical, operational and environmental constraints as well as any changes thereto. Under Article 5, one of the roles of the Coordination Committee is to advise the Commission on the coordination parameters to be determined in accordance with Article 6.

3.57 The determination of the parameters is a forward-looking projection in which we must take account of expected demand, capacity, and relevant constraining factors, during S23, in an objective manner.

3.58 In the Draft Decision, we considered potentially relevant runway constraints, as well as any changes thereto, in the hours between 2200z and 0600z (or 11pm to 7am local time). This requires us to consider potential Operating Restrictions (as defined by Regulation (EU) No 598/2014) pertaining to the completion of the North Runway.[6] We identified two such potentially relevant constraints contained in the planning permission for the North Runway:

[6] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0598&from=EN

- Condition 3 (d)[7]
- Condition 5

3.59 While we are not responsible for the introduction or enforcement of Operating Restrictions, any limiting effect on the possibilities of accommodating the air traffic in the relevant scheduling season may be a relevant constraint for the purposes of the Slot Regulation, and thus a factor to take account of. This interaction between the determination of airport capacity parameters under the Slot Regulation, and the introduction of Operating Restrictions, is set out in Regulation 598/2014 ('the 2014 Regulation'), in which the introduction of an Operating Restriction is established as an input to the capacity declaration process.

3.60 In the Draft Decision, we provided an overview of these issues as they appeared to us. We asked interested parties to make submissions setting out their positions and providing factual information on the matters raised, in order that CAR might have such facts and matters before it, and might take those into account when declaring the coordination parameters for S23. This followed similar requests which we made as part of the S22 and W22 capacity declarations, relating specifically to Condition 5 at that time. Below we re-state the overview from the Draft Decision and our provisional conclusion, then summarise the submissions we received from interested parties, and then set out our conclusion on this matter for the purposes of the S23 capacity declaration.

Background

3.61 In September 2021, we published a Draft Decision (CN5/2021) and Final Decision (CN6/2021) on the Summer 2022 capacity declaration.[8] As part of that process, we noted the expected completion of the North Runway during August 2022, and the potential for certain associated planning conditions (dating from 2007) to crystallise on foot of that event. In particular, we noted that Condition 5 of the North Runway planning permission ('C5') states as follows:

'On completion of construction of the runway hereby permitted, the average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period as set out in the reply to the further information request received by An Bord Pleanála on the 5th day of March, 2007.'

3.62 The planning condition as written provides for an average limit on aircraft movements at the entire airport which is below the number of movements on the pre-existing runways prior to completion of the North Runway. It also refers only to a specified 92 day modelling period. There are various undefined terms to which different interpretations could potentially be ascribed, such as '*completion of construction'*, and '*aircraft movements'.*

3.63 We reviewed certain available planning documents and materials relevant to the interpretation of C5. We noted that, based on our review of the planning materials, the original intended purpose of Condition 5 was to prevent the North Runway leading to an increase in night flights and consequently an increase in night noise, relative to an estimated counterfactual 'constrained traffic' scenario where the North Runway would not be built.

3.64 Ahead of the S22 declaration, we consulted with and sought the views of relevant parties, including daa and the airlines. We commissioned a report from an aviation noise expert (Egis).

[7] With conditions 3(a) to 3(c), which relate to daytime operations, having already been taken account of as described above.
[8] https://www.aviationreg.ie/_fileupload/DraftDecisionS22.pdf
https://www.aviationreg.ie/_fileupload/FinalDecisionS22.pdf

We then sought views more broadly, through publication of our Draft Decision on the S22 parameters. We concluded that there is uncertainty regarding C5, and how it should be interpreted. In the absence of further clarity in relation to how C5 might be interpreted and applied, we ultimately considered that close alignment with the express wording of the Condition would be an appropriate way to take account of the potential constraining factor represented by C5, for the purpose of declaring scheduling parameters under the Slot Regulation.

3.65 The wording of C5 identifies the constraint as being calculated by way of a single average measurement to be taken in each year over a specified 92 day modelling period, applying prospectively from completion of construction of the runway. This modelling period, which is derived from the noise measurement methodology used in the initial planning process, spans the period from 16 June to 15 September. The terms of C5 do not reference any restriction on the level of night time aircraft movements other than by way of an average to be calculated over this 92 day period.

3.66 We also noted, in particular, that this view is aligned with what had been suggested through the consideration by the Aircraft Noise Competent Authority ("ANCA")[9] of the *Relevant Action* application submitted by daa to replace the condition with an annual noise quota system. It also aligned with the view of Egis.

3.67 As the North Runway would not be completed by 16 June 2022, the first prospective 92 day modelling period over which such a calculation could be made would be in 2023. On that basis, we concluded that, during Summer 2022, Condition 5 would not serve to reduce the capacity of the airport below the 2021 capacity.

3.68 Thus, the declared runway capacity for Summer 2022 was unchanged relative to Summer 2021:

- The runway capacity would remain based on single runway operations for the full season, i.e. it would exclude any potential increases in infrastructural airfield capacity which might be achievable in August-October 2022, once the North Runway is open to traffic.

- Condition 5 would not serve to reduce capacity below the single runway capacity limits already in place prior to completion of the North Runway.

3.69 Similarly, for the Winter 2022 season from October 2022 to March 2022, we noted that no part of the 92 day modelling period is encompassed within a winter season.[10]

Developments since September 2021

3.70 The North Runway has now become operational as of 24 August 2022, in line with the expected timeline outlined above. The Aircraft Noise Competent Authority (ANCA) has consulted on and, on 20 June 2022, made a Regulatory Decision in application of the *Balanced*

[9] https://planning.agileapplications.ie/fingal/application-details/88548
See for example: '*Appendix A ANCA Direction to Tom Phillips'*, in particular request number 38, where the applicant was asked to calculate the impact of C5 on current scheduled demand based on average movements over the 92 day period; 'Noise Problem Advice Report', page 61, which states that the wording of the condition would suggest that the limit applies to the 92 day period and not beyond this period while also identifying uncertainty as to how C5 should be interpreted; 'DAA OP Restriction Report ANCA', page 9, which states that the 65/night limit is based on the average over the 92 day modelling period (16 June to 15 September).
[10] https://www.aviationreg.ie/_fileupload/W22%20Parameters/Final%20Decision%20W22.pdf

Approach to the *Noise Problem* which it identified would arise from the adjustments to Conditions 5 and 3(d) proposed by Dublin Airport.[11]

3.71 ANCA was specifically set up by legislation to regulate noise at Dublin Airport. This process was carried out over 2020-2022, including a public consultation which received over 1000 responses. On 8 August 2022, Fingal CC granted permission for this *Relevant Action*, in doing so adopting the Regulatory Decision made by ANCA. These documents and associated materials include some further references to C5 which are discussed below.

3.72 This Regulatory Decision includes the following:

- Condition 5 is revoked, and replaced by a Noise Quota Count (NQC) scheme. This is an annual night noise 'budget', in which each aircraft movement will use a proportion of the budget based on its noise output.

- Condition 3(d) is amended such that it applies from 0000 to 0559 (local time), rather than 2300 to 0700 as originally specified in 2007.

3.73 ANCA gives the following rationale for the decision in relation to Condition 5:

'Replacing Condition 5 with a Night-Time Noise Quota and associated aircraft type restrictions is a much more cost effective means of managing and limiting aircraft noise impacts in line with the NAO.[12] It allows the airport to meet its movement forecasts whilst guarding against any risk that the Applicant's noise forecasts are optimistic with respect to fleet modernisation. For example, should the aircraft fleet mix not improve as forecast, the Night-Time Noise Quota will limit the number of night flights.'[13]

3.74 FCC's decision has been appealed to An Bórd Pleanála (ABP), by appeal lodged on 24 August 2022.[14] The statutory timeframe within which ABP ought to determine an appeal is 18 weeks; as per the ABP website, the case is currently expected to be decided by 5 January 2023. However, this 18 week period may be extended by ABP if it considers such an extension to be necessary. ABP will also be required to follow the Balanced Approach, and, should ABP be considering an Operating Restriction which was not included in the ANCA consultation, it must engage in further dialogue and consultation requirements.

3.75 For an Operating Restriction in the form of an NQC scheme to be introduced within the meaning of Regulation (EU) No 598/2014, it must follow the introduction process as outlined in that Regulation and also the Aircraft Noise (Dublin Airport) Regulation Act 2019.[15] Article 8 of the Aircraft Noise Regulation obliges competent authorities such as ANCA to give to the Member States, the Commission and the relevant interested parties six months' notice, ending at least two months prior to the determination of the slot coordination parameters for the relevant season in which the Operating Restriction is to be introduced.

3.76 As the NQC Operating Restriction has not yet been notified to relevant parties (and in any case is subject to appeal), it has not been introduced in time for Summer 2023 and is therefore not a relevant constraint for Summer 2023.

[11] https://www.fingal.ie/aircraftnoiseca/documents-f20a0668
[12] Noise Abatement Objective
[13] https://www.fingal.ie/sites/default/files/2022-06/Regulatory%20Decision.pdf , page 9
[14] https://www.pleanala.ie/en-ie/case/314485
[15] https://www.irishstatutebook.ie/eli/2019/act/12/enacted/en/print#sec10

Potential Operating Restrictions for Summer 2023- Draft Decision Overview

3.77 In the Draft Decision, we noted that CAR is not itself responsible for enforcement of or compliance with such planning conditions or Operating Restrictions. We must take account of relevant Operating Restrictions on the basis of evidence or submissions concerning the constraining factor represented by such restrictions from relevant parties, and/or positions that are likely to be adopted by those parties.

3.78 For CAR to be able to make its decision on the parameters, these ought to be clearly stated, as is the case with conditions 3 and 4, such that we could then in good time build the constraining factor into our capacity analysis and/or the coordination parameters for the relevant scheduling season. We built Condition 3(d) as currently stated into our simulations, which prevents the use of the North Runway between 2200z and 0600z, or 11pm to 7am local time. While FCC has decided to shorten this window to 12am to 6am (local), we continued to assume that it is in effect from 11pm to 7am (local) for the S23 capacity declaration. We noted that no party had proposed any alternative approach to taking account of condition 3(d) for S23.

3.79 In relation to C5, it appeared to us that the positions of relevant parties could be summarised as follows:

- There is uncertainty/disagreement over how C5 should be interpreted.
- Certain interested parties appear likely to take the view that C5 may not be capable of being enforced against them for S23.

3.80 We asked interested parties for views of and evidence concerning each of their positions on these points.

Interpretation of C5- Draft Overview

3.81 As set out above, ahead of the S22 declaration, we concluded that there was uncertainty in relation to the interpretation of C5. This followed engagement with daa and airlines, and also a report we commissioned from an aircraft noise expert (Egis), as well as a review of the published materials made available by ANCA relating to the *Relevant Action* application submitted by daa. We then sought views more broadly, through publication of our Draft Decision in September 2021. In the Draft Decision, we stated that we were not aware of any changes in the positions of relevant parties from whom we initially sought views in 2021, including daa and airlines, either as part of, or subsequent to, our capacity parameter consultations in September 2021 and April 2022.

3.82 In the published 'Noise Problem Advice Report' for ANCA, NCL states the following:

'Condition 5 is potentially badly worded as it refers to the '92-day modelling period' which is established through UK aviation noise policy as a period from mid-June to mid-September i.e. the 'average summer period'. The wording of the condition would suggest that the limit applies to this period and not beyond this period.

Regardless of how this condition should be interpreted, it must be considered a noise-related operating restriction in the context of EU598. The reason for the condition also highlights it as means of controlling night time use.'

3.83 In its Regulatory Decision of 20 June 2022, ANCA states that '*Conditions no. 3(d) and 5 have not yet come into effect or operation, as the construction of the North Runway on foot of the North Runway Planning Permission is ongoing*.'[16] C5 is further described as a '*numerical cap on the number of flights permitted between the hours of 23:00 and 07:00 daily'*.

3.84 The FCC decision of August 2022 uses similar language in relation to the R*elevant Action*. Like the ANCA material which we reviewed in 2021, FCC also notes that the effect of the *Relevant Action* would be to '*replace the average 65 aircraft movements/night (averaged over the 92 modelling days) cap'*.[17] The Regulatory Decision Report from ANCA variously describes C5 as an average calculation, but does not state whether this averaging period is viewed as the 92 modelling period specified in C5 or whether C5 should be interpreted to imply an average restriction longer than, or outside, this period.

3.85 Both ANCA and FCC state that the *Relevant Action* would lead to an increase in the number of night flights relative to the counterfactual. NCL identifies C5 as an Operating Restriction, as does ANCA, who links the coming into effect of same to the completion of construction of the North Runway. This suggests that C5 is considered to represent an Operating Restriction of some type which is in effect, and further, that it is constraining on night flights, at some point, relative to forecast demand.

3.86 This presumption that C5 represents some form of restriction leads to the question of the specific scope/interpretation of that restriction and how it might be enforced (or objected to) by the interested parties during S23. In the Draft Decision, we noted the absence of clarity from the above published materials in relation to whether and how it might be enforced, NCL being the only party (to our knowledge) to have addressed the interpretation of C5 directly. Unlike conditions 3 or 4, NCL did not, or was unable to, conclude on how C5 should be interpreted as per the above quotation from the NCL report.

3.87 We noted that no proposal was contained within the Coordination Committee's advice to make any adjustments to the runway parameters within the hours relevant to C5 for S23. Further, as noted below, it appeared that airline members of the Coordination Committee might take the position that C5 could not be enforced on them for S23, rather than considering how it should be interpreted.

3.88 Liam O'Grádaigh, in his response to our Winter 2022 parameters draft decision, stated that it was never the intended purpose that the 65 limit be applied to the 92 day period only.[18]

3.89 Thus, we noted that we had not seen anything to suggest how the uncertainty might be addressed by the respective parties, particularly as to whether and how C5 would be enforced/complied with/challenged/irrelevant for S23. We asked that parties clearly set out their positions on this issue to allow us to consider the implications of any such views for the purposes of finalising the declaration of parameters for S23.

3.90 As we explained previously, based on our own review of the original planning materials from 2007 and earlier, the original intended purpose of C5 was to prevent the North Runway leading to an increase in night flights relative to an estimated counterfactual constrained traffic scenario where the North Runway would not be built. C5 can be traced to 'Information Request 5', issued to Dublin Airport by ABP on 9 January 2007. This required Dublin Airport to quantify '*the potential for increase in night flights on the existing 10R/28L runway which could*

[16] http://documents.fingalcoco.ie/NorthgatePublicDocs/00742818.pdf , page 4
[17] http://documents.fingalcoco.ie/NorthgatePublicDocs/00747949.pdf , 162
[18] https://www.aviationreg.ie/_fileupload/W22%20Parameters/Liam%20O'Grady%20response.pdf

derive from the growth of air traffic at the airport arising from the proposed runway relative to that which would occur without the new runway.'

3.91 As part of its response, Dublin Airport stated that, in a 'constrained' scenario whereby the North Runway would not be built, it estimated that the number of night flights would be constrained to an average of 65 over the 92-day modelling period. On the other hand, should the North Runway be progressed, the average number of flights over the 92 day modelling period would increase to 95. It is apparent, then, that ABP used the 'constrained' estimate to set out a limit of 65 flights, on average, over the 92 day modelling period. Given that Condition 3(d) would already prevent the use of the North Runway for night flights, in practice C5 would solely constrain the use of the pre-existing main runway.

3.92 Thus, ABP believed that, even though the North Runway would not be used during the night period due to condition 3(d), its presence and availability in the day time would cause an increase of almost 50% in the '*potential*' number of night movements on the pre-existing main runway. This belief, in turn, was generated by Dublin Airport's response to Information Request 5, as well as the various forecast scenarios underpinning the 2004 Environmental Impact Statement, which states at paragraph 16.1.5.5 that '*the number of night movements will be restricted if the new runway is not built as the overall use of the airport is constrained*.'[19]

3.93 We noted that the forecast that the 92-day average demand for night movements would not grow beyond 65 if the North Runway were not built has been shown to be inaccurate, given that it had grown to over 100 by 2019 in the absence of the North Runway.[20] Thus, rather than preventing an increase in night movements on the southern runway due to the existence of the North Runway, the condition as worded would appear to require a reduction by over 35% relative to the pre-existing number of night movements.

3.94 The Dublin Airport approach to estimating the 'constrained' scenario appears to have suggested that the available capacity on the pre-existing runway would remain unused in a scenario where, at the same time, the number of flights is supposedly driven by the same runway being "full". Given condition 3(d), we noted that it was more likely that the 'constrained' scenario would continue to broadly track the 'unconstrained' scenario during the night. In both the 'constrained' and 'unconstrained' scenarios, once demand exceeds the operational capacity of the pre-existing main runway (with a given level of service), the operational capacity of the pre-existing runway will be the key driver of the number of night flights.

3.95 If anything, we consider that the reverse is more likely, i.e. the average number of night flights would be somewhat higher in the 'constrained' scenario relative to the 'unconstrained' scenario. This is because capacity constraints during the day would mean that airlines must operate into the adjoining night hours. For example, between 2015 to 2019, when the airport experienced a strong period of growth, we observed significant increases in the number of flights in the 0400z hour, likely linked to the increasing constraints in the preferred hours for the first wave of departures, namely the 0500z and 0600z hours.

3.96 As set out above, the day-time parameters are declared in line with Wishlist 2 due to the capacity provided by the North Runway. The Egis modelling of a busy day in S23 shows that the availability of same from 0600z is likely to lead to a reduction in night movements in the 0400z hour relative to the counterfactual 'constrained' scenario. Comparing slide 19, which is

[19] Dublin Airport Environmental Impact Statement; Northern Parallel Runway; Part 2 – Text. December 2004
[20] Noting that the 2019 level of movements, does not, either, represent the limit of night movements which might occur in the absence of the North Runway.

analogous to the 'constrained' single runway scenario, with slide 30, in which the parameters are based on the North Runway being available from 0600z, we anticipate that approximately 5 additional movements would be pushed into the 0400z hour in the 'constrained' scenario.

Introduction of an Operating Restriction- Draft Overview

3.97 In the Draft Decision, we noted that a number of cargo aircraft operators have stated that C5 must follow the rules for the introduction of new noise-related measures, as set out under the 2014 Regulation. As we understand it, the principal points which might be made by certain aircraft operators in the context of potential action to enforce the provisions of C5 on them, would be that:

- The 2014 Regulation uses the term 'introduction' to mean the putting into effect of the restriction. On that basis, given that C5 was not put into effect before the end of the transition period set out in the 2014 Regulation, C5 would need to follow the process for assessment and notification to the European Commission and other Interested Parties, as set out in the 2014 Regulation, in order to be put into effect.

- Furthermore, C5 was neither introduced, nor notified to the European Commission, in line with the requirements of Directive 2002/30/EC and the associated implementing SI from 2003.

3.98 This, in turn, means that these operators (or other interested parties) argue that they have not at any point had the benefit of a consultation and notification process in relation to the time-specific introduction of a clearly defined Operating Restriction, nor of the application of the Balanced Approach to the development of same.

3.99 We invited aircraft operators to indicate whether they still maintain these possible interpretations and positions on this issue in particular.

3.100 We noted that Directive 2002/30/EC was the precursor to the 2014 Regulation, in establishing rules and procedures for the introduction of noise-related operating restrictions such as C5 at Community airports.[21] It was transposed into Irish law by S.I. No. 645/2003.[22] This SI appointed the Irish Aviation Authority (IAA) as Competent Authority for ensuring compliance with the requirements specified. Specifically, for an Operating Restriction to be introduced, the following was required:

- Adoption of the ICAO Balanced Approach to addressing noise problems at airports. This requires 'careful assessment of all different options to mitigate noise, including reduction of aeroplane noise at source, land-use planning and management measures, noise abatement operational procedures and operating restrictions.'[23] It also required an assessment of the cost effectiveness or cost/benefit analysis of the introduction of specific measures, and that such measures not be more restrictive than necessary in order to achieve the environmental objective established for a specific airport.

- Consultation and notification of interested parties in relation to the introduction

[21] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02002L0030-20081211

[22] https://www.irishstatutebook.ie/eli/2003/si/645/made/en/print

[23] 2002 Directive, Recital 10

of Operating Restrictions, and the application of the Balanced Approach in relation to same.

- A requirement for the IAA to inform the Minister, the European Commission, and other Member States of the European Communities of the introduction or modification of operating restrictions.

3.101 We stated that we were not aware of the specified consultation with interested parties taking place, nor, as far as we are aware, was any such notification made by the IAA to the European Commission and other Member States, nor of any IAA involvement in the process.

3.102 We noted also that CAR has been assigned the role of the Member State for the purposes of the Slot Regulation, and no such notification of the introduction of C5 has been received by CAR.

3.103 We requested any confirmation from interested parties as to their positions on this point. We also requested any further factual information in relation to any introduction or notification process of C5 to the European Commission, and if that did not yet occur, views on what the potential implications of this might be for S23.

3.104 We noted that other aircraft operators have more broadly stated non-acceptance of either the Commission's right to declare a reduced capacity at Dublin Airport on foot of condition 5, or of the Commission's, ACL's, and/or daa's right to withdraw historic slots from carriers on foot of a reduced capacity declaration. This suggests that they might similarly object to any attempt to impose C5 on them in a manner which reduces their operations at Dublin, based on the reason raised by the cargo operators, or otherwise. For example, in its response to our Draft Decision on the S22 parameters, Aer Lingus states:[24]

'Aer Lingus will continue to assess all options to avoid or mitigate the potential impact of Condition 5 on capacity at Dublin Airport and the above is entirely without prejudice to any legal remedies which Aer Lingus may have in this regard.'

Draft Decision Proposal

3.105 In the Draft Decision, we stated that we had a clear view on the appropriate way to take account of condition 3(d). Condition 3(d) states that Runway 10L-28R (North Runway) shall not be used for take-off or landing between 2300 hours and 0700 hours, except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports. This was reflected in our simulation modelling for S23.

3.106 Given the uncertainty in relation to C5, as well as the potentially complex interactions between such positions and the capacity limits in place, we stated that we were not clear on how we should take account of C5, and that we required views from interested parties as to how we should take account of C5.

3.107 Given the facts and matters outlined above, and in the context of no advice from the Coordination Committee to adjust the relevant runway parameters and the general obligation under the Slot Regulation to tend towards a maximal rather than minimal declaration of the

[24] https://www.aviationreg.ie/_fileupload/20210916%20Aer%20Lingus%20response%20to%20CAR%20draft%20Capacity%20Declaration%20at%20Dublin%20Airport%20for%20Summer%202022.pdf

available capacity, we said that our provisional view was to make no adjustments (either decreases or increases) to the R60 limits between 2200z and 0600z.

3.108 On that basis, the previously declared S22 capacity, which was based on single runway operations off Runway 28L, would remain unchanged for S23. Thus, no more night flights on the pre-existing southern runway would be possible in S23 than were already possible before the North Runway was completed (and over the entire S23 season, rather than just the 92 day modelling period within it). We also assume that condition 3(d) is in effect, meaning that the North Runway is itself unavailable between 2200z and 0600z. As per the Egis simulations, we noted that the daytime availability of the North Runway would be likely, if anything, to lead to a marginal reduction in night flights in the 0400z hour relative to the counterfactual 'constrained' scenario whereby the North Runway is not operational in S23.

Responses to Draft Decision

3.109 Aer Lingus supports the proposed approach to the relevant R60 parameters and states that it would be inappropriate and wholly disproportionate for CAR to attempt to pre-emptively implement what Aer Lingus describes as an unclear, fundamentally flawed and apparently ineffective condition as against applying the actual published decision of ANCA, when to do so would have such a profoundly damaging impact to the aviation industry and Irish economy. It notes the distinction between our role to take constraints into account for scheduling purposes, as against any suggestion that it is our responsibility to monitor, enforce and police planning matters. It supports the analysis of the cargo operators, as summarised in paragraphs 3.83 to 3.89 Draft Decision, that it is not certain that C5 was ever validly brought into effect.

3.110 Aer Lingus lays out what it terms the potential '*catastrophic*' impact of C5 on operations at Dublin Airport and states that implementation would seriously risk a permanent loss of connectivity for Ireland. Aer Lingus confirms that it would assess all options to protect its historical slot portfolio in the event of C5 impacting on capacity at Dublin Airport including any legal remedies which it may have in this regard.

3.111 Dublin Airport considers that C5 gives rise to difficult questions of interpretation, as reflected in the Draft Decision and the NCL report commissioned by ANCA. It considers that any decision in relation to coordination parameters should reflect an '*appropriate interpretation*' of the North Runway planning permission and Condition 5, and it does not endorse any approach which does not take such an interpretation of it.

3.112 Dublin Airport notes the assumption which previously underpinned the S22 and W22 parameters, i.e. that the first 92-day modelling period falls in S23. It states that it believes this is a reasonable interpretation of C5 but that there are also alternative interpretations of this condition, given its ambiguity and complexity. It states that while it notes the analysis contained in the Draft Decision on the background of the North Runway planning permission, it also notes that the 92-day modelling period is not addressed in the Draft Decision for Summer 2023.

3.113 Dublin Airport notes the suggestion from the cargo operators that C5 is an Operating Restriction and thus would not apply in S23 due to non-compliance with the 2014 Regulation and/or Directive 2002/30/EC in relation to notification requirements. It states that we should consider obtaining the view of ANCA on this point and quotes the NCL report written on behalf of ANCA, which states that C5 is indeed an Operating Restriction, and was introduced prior to

June 2016, when the 2014 Regulation entered into force.[25] Dublin Airport confirms that it is not aware of any notice being provided under Directive 2002/30/EC.

3.114 Finally, Dublin Airport states that we should consider the implications for slot coordination if C5 is interpreted in a different manner by a competent authority.

3.115 DHL supports the proposed parameters. It notes the uncertainty in relation to C5 and the decision of FCC in relation to the *Relevant Action* application. DHL notes that declaring S23 runway capacity in line with S22 capacity prevents additional night flights, thus preventing an increase in night noise. It considers that previous efforts in the Coordination Committee to identify a mechanism to restrict night slots was discriminatory under the Slot Regulation.

3.116 DHL considers that any implementation of C5 (or 3(d)) would be inconsistent with the 2014 Regulation. DHL seeks certainty that no additional Operating Restrictions will be introduced at Dublin Airport until the ABP appeal is heard and sufficient notice of the introduction has been provided to all relevant operators as per the legislation.

3.117 DHL sets out the importance of night flying to its business model, and provides an overview of the value of air freight to the Irish economy.

3.118 FedEx supports the proposed parameters and states that it believes that these offer a path forward which would not conflict with Ireland's international obligations under the EU-US Air Transport Agreement (ATA). FedEx considers that the imposition of C5 (and also 3(d)) would conflict with the obligations of the Government of Ireland to ensure adoption of the ICAO Balanced Approach, incorporated in European Directive (EC) 2002/30 and Regulation (EC) 598/2014 and incorporated by reference in Article 15 of the ATA. It highlights the absence of due process which the ATA requires Ireland to afford to U.S. carriers when considering limitations on operations.

3.119 FedEx states that Article 15 of the ATA imposes specific consultation timelines, mitigation efforts, and measures to ensure that U.S. carriers are afforded a fair and equal opportunity to compete, when government authorities consider restrictions at airports related to environmental concerns.

3.120 FedEx outlines the operational impact which C5 could have on its business and states that if we were to attempt to implement restrictions consistent with the conditions or propose alternative restrictions that do not meet the process and substance requirements of the ATA, the Government of Ireland will have failed to act consistently with the ATA. In such a situation, FedEx states that it may be forced to seek intervention by the U.S. Government and/or the European Commission. It notes that such intervention could result in the imposition of a remedy, based on a broad scope of countervailing measures available to the U.S. Government and the Commission when there is a breach of the ATA.

3.121 The Freight Transport Association of Ireland (FTAI) supports the proposed parameters. It highlights the importance of night flights at Dublin Airport to the air cargo industry as well as the contribution of this industry to the Irish economy. It states that Condition 3(d) and 5 of the North Runway planning permission are not conducive to the operation of night flights for cargo and would have significant impacts for the economy and air freight services in Ireland. Finally, it states that it is not clear that the implementation of these restrictions would be in line with Irish obligations under European Directive (EC) 2002/30 or Regulation (EC) 598/2014.

[25] Thus also before the establishment of the current ANCA, within FCC.

The FTAI also states that would it be inconsistent with the obligations of the Government of Ireland under the U.S.-EU ATA with regard to U.S. carriers operating in Dublin.

3.122 UPS supports the proposal to make no changes to the R60 limits in the night hours relative to S22. UPS states that restrictions on night time runway limits would adversely affect their operations, leading to a delay in cargo moving in and out of the country, as well as delivery of time-critical shipments, with consequent impacts on Ireland's competitiveness. UPS provides an overview of the value of air cargo night flights via Dublin Airport.

3.123 Like FedEx, UPS states that C5 requires notification to the European Commission, thus is not eligible to be introduced for S23. It also considers that C5 does not comply with the Balanced Approach more generally, and therefore the 2014 Regulation and the ATA. UPS states that it would continue to challenge any decision which impacts its competitiveness, violates EU–U.S. Air Agreements, does not take into account the Balanced Approach, and ultimately restricts growth of their business and the Irish economy as a whole.

3.124 Liam O' Grádaigh has restated his submission on the W22 Decision which states that C5 should apply as a year-round limit of 65 flights each night, as opposed to an average over the 92-day modelling period. He states that it was never the intention of ABP that C5 would apply to the 92 day period only. He states that daa was intending to adhere to the '*65 night-time flight limit'*, and refers to daa commentary on the nature of C5 in an investor prospectus and 2016 consultation document.[26]

3.125 Pearse Sutton further states that CAR should refer to ANCA on these conditions. He states that the 92-day modelling period was purely a reference to define the average flights over a period, rather than a period over which the 65 flight limit should apply. He further questions why Egis was not provided background material from the Oral Hearings in 2007, and provides the AI request from January 2007 (as discussed in our Draft Decision on S23) and states that this should have been provided to Egis for their review of C5 undertaken in 2021. This issue is also raised by Liam O' Grádaigh in his submission. Liam O' Grádaigh asserts that he is still waiting for a response from CAR on this issue.

3.126 Liam O'Grádaigh asks what plans CAR has if there is a legal challenge to the decision. He questions what the legal implications will be for CAR if the planning authority decide to retain the 65 flight limit. He states that in current planning applications, Dublin Airport intends to adhere to the 65 night flight limit. He further states that if the condition was not restricting operations, Dublin Airport would not be seeking to change it, yet CAR has interpreted C5 as essentially '*non-existent*'.

3.127 In relation to the point made by the cargo operators that the rules for the introduction of noise related Operating Restrictions have not been followed, Liam O'Grádaigh questions why daa would be applying to revoke the condition if this were the case. He considers that if the cargo companies are suggesting that these Operating Restrictions are not legitimate based on non-adherence to EU law, then it could also be argued that the Relevant Action application to revoke and amend them is premature as the Operating Restrictions are not in effect. He suggests not opening the North Runway as a solution, or as the North Runway has already opened, he states that the 65 flights per night limit should be implemented until the Planning Authority has reached a decision on the conditions.

[26] We have considered this daa commentary referred to by Mr O' Grádaigh. We note that, in that commentary, daa refers to the restriction as an average, over which period being unspecified, rather than a nightly one.

3.128 Michael O' Rourke (whose submission represents both Saint Margaret's The Ward Residents Group and his own personal views), Dr. Niamh Maher, Pearse Sutton, and Stephen Smyth share the view that a year-round nightly limit of 65 should be implemented until the Planning Authority has reached a decision on the Relevant Action application by daa.

3.129 Liam O' Grádaigh, Michael O' Rourke and Pearse Sutton state that CAR did not engage with local communities despite section 33(d) of the Aviation Regulation Act, 2001, which requires CAR to have due regard for '*the contribution of the airport to the region in which it is located*'. Liam O' Grádaigh and Pearse Sutton further question whether we have appropriately considered the health implications for residents given that the HSE has stated that Condition 3(d) and 5 were implemented to protect public health. Liam O' Grádaigh states that it is not for CAR to decide how to interpret these conditions as it does not have the expertise nor the legal remit. He and Pearse Sutton refer to a health webinar on the effects of aircraft noise on the cardiovascular system which concludes that all night-time flights should be stopped due to the health implications. Pearse Sutton states that CAR, daa and ANCA have all failed to carry out any studies on the health effects of night noise in reaching their decisions. He also states that no consultation was carried out by CAR with any of the resident groups in St Margarets The Ward area.

3.130 Ryanair considers that any decision which would have the effect of removing the entitlement to slots which Ryanair has under the Slot Regulation, based on the alleged requirements of C5, would be unlawful, because an unclear condition is not a proportionate or transparent basis upon which to remove Ryanair's rights. It states that the wording of C5 means that implementation of the condition for Summer 2023 is rendered extremely challenging to the point of unenforceability. It states that regulatory conditions which are insufficiently precise are not enforceable. It states that any decision to implement C5 in a manner that results in Ryanair (and other Dublin airport users) losing historic slots, when there is an interpretation of C5 available that results in users not losing historic slots, would be irrational, disproportionate, and a breach of CAR's statutory duty under Article 6(1) of the Slot Regulation and Section 8(1) of the Aviation Regulation Act, 2001.

3.131 Ryanair outlines its position that, under EU law, the failure to notify renders the unnotified measure inapplicable, and this defect therefore operates as a fundamental bar to the operation of C5. It states that C5 does not have operative effect by reason of this defect and conduct allegedly contrary to C5 will not be unlawful. Accordingly, Ryanair calls on CAR not to apply C5. As an unnotified measure, Ryanair states that it has no effect and therefore there will be no breach or illegality in any alleged failure to comply with C5.

3.132 Ryanair states that if CAR were to attempt to apply C5 in such a manner as removed Ryanair's entitlement to slots under the Slot Regulation, it would be unlawful under the Slot Regulation, general principles of EU law, and Ryanair's property rights. Ryanair states that, should CAR take any decision which would result in Ryanair losing historic slots, Ryanair would be forced to seek a judicial review of the decision on the grounds of the breaches of domestic and EU law.

3.133 Ryanair provides an overview of the direct and indirect impacts (based on a S21 peak week) which it considers that the operation of C5 could have on it, the industry, and the Irish economy.

CAR Final Decision

3.134 The responses summarised above are consistent with the overview we provided in the Draft

Decision, namely that the views of relevant parties in relation to C5 could be summarised as follows:

- There is uncertainty/disagreement over how C5 should be interpreted.
- Certain interested parties take the view that C5 is not capable of being enforced against them for S23 and/or is unlawful more generally.

3.135 Clear but opposing views are held by residents, on the one hand, and by aircraft operators, on the other hand, in relation to C5:

- Only the residents provide a clear view in relation to the appropriate interpretation of C5, believing that it should be interpreted to imply a year round nightly limit of 65 movements as opposed to applying on average over the 92 day modelling period.
- Aircraft operators generally provide a clear view that C5 is not capable of enforcement, during S23 and/or more generally, on the grounds of various legal bases including being void for uncertainty, non-compliance with EU and national law, as well as non-compliance with the obligations of the Irish Government under the US-EU Air Transport Agreement (ATA). Aircraft operators make it clear that, in particular, they will challenge any attempt to implement C5 on them in a manner which would prevent them operating their historic slots.

3.136 As suggested above, we note that none of these parties consider that C5 should be enforced in the precise manner it is written during S23.

3.137 As previously, Dublin Airport remains uncertain as to how C5 might be interpreted, while also stating that the parameters should take '*appropriate account*' of it. It notes that C5 contains ambiguities and complexities. It also does not provide a view on the implications of the non-notification of C5, in relation to how this might affect the appropriate way to take account of it for S23, other than to suggest that we refer to ANCA on this point.

3.138 We consider that the issues raised by the relevant parties give rise to a range of complex questions of planning law, as well as EU and international law. As suggested by certain respondents, including Aer Lingus and Liam O'Grádaigh, it is not the role of CAR to determine such issues. We are not a planning enforcement authority and are not able to predict with any sufficient degree of certainty or foreknowledge, the outcome in the event that these issues were to come before such an authority, where presumably the relevant parties would make the arguments outlined above on the complex legal and planning questions apparently raised by C5.

3.139 In our view, as set out elsewhere in this document, we ought to have regard to the evidence and submissions of relevant parties, and to the proposals and advice from the Coordination Committee. We also ought to consider a possible maximal, rather than minimal, approach to capacity declaration, having regard to the terms of the Slot Regulation. Thus, absent sufficiently objectively clear and cogent material and evidence suggesting otherwise, we ought to be slow to make any decision to adjust the parameters for slot allocation in a manner that would result in more restricted capacity and in decreasing the possibilities for accommodating air traffic. This is so generally, and also if this would imply the withdrawal of historic slot entitlements of air carriers. Any other approach may risk pre-emptively giving particular weight to a constraint by taking a view of its meaning and effect in particular

circumstances, where such might differ from that ultimately deemed to be represented by C5, or giving particular weight to a constraint which might be deemed unenforceable or to not fall to be enforced in S23.

3.140 Thus, in line with our Draft Decision, the R60 parameters for 2200z to 0600z are declared in line with the pre-existing S22 capacity. As per the Draft Decision, we reiterate the following:

- No advice has been received by us from the Coordination Committee to make any adjustments to the relevant R60 limits.
- Retaining the pre-existing single runway based capacity declaration in the night hours for the entire S23 season means that no more runway capacity can be allocated than was possible in the absence of the North Runway.
- The Slot Regulation obliges us to tend towards a maximal declaration of the available capacity, within the bounds of clearly stated or evidenced constraints.

3.141 As we stated in the Draft Decision, an Operating Restriction ought to be clearly set out well in advance of the capacity declaration for the relevant season, such that there is clarity on the scope and duration of the legally enforceable constraining factor which it will represent during the relevant season. In that context, as noted above, the 2014 Regulation requires six months' notice to be provided (following the relevant consultation and appeals procedures) of the introduction of an Operating Restriction, ending at least two months prior to the determination of the coordination parameters for the season in which it is to take effect. This enables the orderly functioning of the aviation industry by allowing aircraft and airport operators to plan operations accordingly, any constraint to be translated into the capacity declaration as necessary, as well as allowing Air Navigation Service Providers and EUROCONTROL (the network manager) to plan for expected changes to traffic flows, operating procedures and concepts, and traffic forecasts.

3.142 Given that this is not the case in relation to C5, we agree with Dublin Airport and Liam O'Grádaigh that it is important for stakeholders to consider what may occur in the event that it is determined that C5 is enforceable, and it should then fall to be enforced both within S23 and in a manner which requires a reduction in aircraft movements, in a given period, relative to the level which prevailed on the Southern Runway before the North Runway was completed.

3.143 As per Article 6(1) of the Slot Regulation, we are required to determine the parameters and provide these to the airport coordinator in good time before the initial slot allocation takes place. Thus there is no scope to postpone this current declaration process materially beyond September 2022, as outlined in the worldwide calendar for coordination activities for S23.[27]

3.144 Therefore, in the event that such a decision is made by an authority charged with interpreting and enforcing planning conditions, the Commission may need to review the affected parameter(s) by reference to the Slot Regulation, Worldwide Slot Allocation Guidelines, and supporting materials. This might require a supplementary capacity declaration, potentially accompanied by a Local Rule to allocate any required reduction. While not part of the standard coordination process, we note that such an approach has occurred at a number of other Level 3 Coordinated airports during S22 whereby capacity reductions have been

[27] https://www.iata.org/contentassets/4ede2aabfcc14a55919e468054d714fe/calendar-coordination-activities.pdf

necessary due to COVID-19 and associated operational disruption.

3.145 The Slot Regulation also references a number of scenarios leading to a result whereby slots may not be used. For example, Section 10.4(b) of the Slot Regulation references *'interruption of air services due to action intended to affect these services which makes it practically and/or technically impossible for the air carrier to carry out operations as planned*'. This might occur if, for example, an order were to be made directly that aircraft operators were to cancel certain operations and not use their historic slots.

3.146 We expect that the specific approach would depend on the particular circumstances, and we would expect to receive advice from the Coordination Committee, and consult with the Coordinator, in relation to same.

3.147 Practically, in order to reflect it in a capacity declaration, we would first need a decision on what precisely C5 lawfully requires and when precisely it requires it. Should this require a reduction relative to the pre-existing single runway capacity, we would likely then need to receive further advice from the Coordination Committee and potentially other stakeholders. Converting a restriction into specific scheduling parameters may be complex; for example, if the restriction is determined to relate to runway times, this would need to be converted to block times for scheduling purposes, potentially with an element of buffer included, while a given number of total or average permitted movements might need to be split across hours, days/weeks/seasons, and aircraft operators.

3.148 Compensatory adjustments would likely be warranted to facilitate flight re-times, e.g. temporary increases in R60 capacity in the 0600z (7am to 8am local) and 2100z hours (10pm to 11pm local) when both the North Runway and Southern Runway can be used during S23, or increases in capacity on any days which may not be subject to the restriction. This would allow for a compensatory increase in the use of both runways during these periods to balance the reduced use of the Southern Runway.

3.149 Furthermore, if an enforceable constraining factor determined to be represented by C5 would require or warrant any adjustments to ATC and/or airfield operational processes or procedures, either on the ground or in the Terminal airspace, this would need be done in a manner which maintains the required levels of safety in ATC operations (which in turn may also impact how it should be reflected in capacity parameters). This has already occurred with Condition 3(d) whereby IAA ANSP holds aircraft short of the North Runway until precisely 0600z (7am local) due to the application of Condition 3(d) on a daily basis.

3.150 It is thus important to highlight to all stakeholders that non-withdrawal of such slots at this time, and the current capacity declaration, should not be taken by operators as any guarantee or commitment on the part of CAR that C5 will not prevent the use of certain slots during S23. Operators should be mindful of this when planning operations for S23; operators might, for example, look to re-time certain flights outside the hours referenced by C5 as part of the S23 initial coordination process, in order to mitigate uncertainty over being able to use these slots in an uninterrupted manner during S23.

3.151 In relation to the comments received on the consultation process and statutory objectives, we note the following:

- The Slot Regulation provides for a specific process whereby the Coordination Committee provides us with proposals and advice in relation to the parameters to be declared. As far as we are aware, it is not general practice to also undertake

any further public consultation on the parameters. This is an additional step we choose to include in order to enhance the declaration process, and we consider all submissions received, as outlined above.

- Section 33(d) of the original Aviation Regulation Act, 2001, referenced by a number of respondents, was removed by the State Airports Act, 2004. Thus, it is no longer one of our statutory objectives. Furthermore, Section 33 relates solely to determinations on the maximum levels of Airport Charges, not our role under the Slot Regulation.

- Coordination Committee members have been aware of the timelines for this consultation (with reference to the worldwide deadline for declaring coordination parameters) which is unchanged now for an 11th scheduling season, and was itself subject to consultation in 2017.

3.152 Finally, in relation to the review we commissioned from Egis in 2021, both Egis and CAR reviewed the AI request of January 2007 referenced by Liam O'Grádaigh and Pearse Sutton. This is the document which contained Information Request 5, discussed above. We note that the Egis review was specifically in relation to the S22 declaration.

Parking Stands

3.153 We have retained the hard constraint on stands as per S22, updating the counts by apron area based on expected availability in S23.

Draft Decision

3.154 In the Draft Decision, we proposed to retain the hard constraint on stands, while updating the stand count relative to S22 to take account of anticipated changes to stand availability in the various apron areas. Dublin Airport proposed maintaining the current parameter while updating the count, as usual, to reflect seasonal changes. There was no objection or alternative proposal made within the Coordination Committee.

3.155 In the letter of advice from the Coordination Committee, concerns relating to stand constraints were referenced by Aer Lingus and by Swiss. Aer Lingus considers that the addition of runway capacity for S23 after the first wave will compound pressure on stands.

3.156 Aer Lingus further states that it can only support additional runway capacity if there is a realignment of the stand allocation plan in the '*core widebody and CBP demand period of 1000z to1400z'.* Finally, Aer Lingus considers that this issue will be compounded in S24 if the West Apron Underpass is being constructed, as stands will need to be removed from service.

3.157 We stated that we do not consider that runway parameters should be used as proxy to address limiting factors which themselves can be (and in the case of stands, already are) the subject of a constraint.

3.158 The current stand parameter operates such that where demand for stands exceeds supply (as per the stand count in the appendix), flights are referred to Dublin Airport for detailed assessment. This is a hard coordination parameter as opposed to a referral parameter. Thus, if the issue cannot be resolved, a slot will not be allocated. We did not receive a specific proposal to adjust the stand parameters or determine it in a different manner.

3.159 We note that the forecast S23 schedule has been facilitated in Dublin Airport's stand planning analysis for S23. The Egis modelling includes the operation of aircraft off/on stand also. While in practice that would be impacted if OTP does not improve relative to S22, we expect that it is likely to improve as set out above. We note that poor OTP can lead to aircraft which are due on stand having to hold until their stand becomes available. The S22 operation is likely not a true reflection of the airfield in a more stable year, i.e. S23.

3.160 If Coordination Committee members continue to consider that stand constraints are not being adequately reflected in the parameter in S23, this may warrant a more objective review of the stand parameter and/or the allocation rules. This might include an objective review of the causes and potential short/longer term remedies; for example, excessive holding off stand in a particular area of the apron may be impacted by insufficient buffer, or differences in OTP by carrier, or various other factors.

3.161 We do not consider that potential constraints in S24 are relevant factors for the S23 capacity parameters. Should there be a requirement to adjust the capacity for S24 due to works on the underpass, or otherwise, this should be considered as part of the S24 capacity determination process.

Final Decision

3.162 We did not receive any specific proposal in relation to the stand parameter. As noted above, if Coordination Committee members consider that the stand parameter is not appropriately reflecting the constraint, ahead of future seasons we suggest that specific proposals are considered with reference to the operation of the stand parameter.

4. Terminal Building Coordination Parameters

4.1 We have decided to roll forward the S22 limits for arrivals, which are set out in Table 4.1. For departures, we maintain the S22 limits for Terminal 1. In line with advice of the Coordination Committee, we reduce the limits for Terminal 2 departures, while also adjusting the load factor assumption for Terminal 2 departures from 95% to 85%.

4.2 We maintain the load factor assumptions of 95% for scheduled services in Terminal 1, and 100% for charter services. We propose to maintain the referral parameters in relation to Terminal 2 check-in desks and US Preclearance as per the S22 capacity.

4.3 These changes are in line with the proposals in the Draft Decision.

Table 4.1: Hourly Terminal Limits for S23

	Summer 2023- Passenger Terminal Buildings Limits	
	Departures	Arrivals
Terminal 1	4,130	3,960
Terminal 2	3,600	3,400

Source: CAR. Hourly limit rolled every 10 minutes

Proposed Hourly Limits – Dublin Airport

4.4 Dublin Airport proposed the rolling forward of the Summer 2022 terminal limits for arrivals and to maintain the limits for departures in Terminal 1 while reducing the limits for departures in Terminal 2. These proposed changes were supported by Aer Lingus, CityJet, Delta, Dublin Airport, and TUI, while all other members, broadly those unaffected by Terminal 2 capacity, abstained from the vote.

Proposed Referral Limits – Dublin Airport

4.5 Referral limits are not hard coordination parameters. If a proposed operation hits a referral limit, it is referred to the airport to attempt to find a workable solution.

4.6 The airport proposed retaining the referral parameter for Terminal 2 check-in desks 1-28 (Terminal 2 operators excluding Aer Lingus) – where demand exceeds 28 desks. It also recommended retaining the referral for US Preclearance, which applies to any new flights, or time changes to pre-existing flights, intending to use this facility.

4.7 There were no objections or alternative proposals in relation to these limits.

Draft Decision on Terminal Capacity

4.8 As part of our decision on the Summer 2018 limits, the Commission assessed the processing capacity of the different passenger terminal building processors with reference to the proposed Summer 2018 limits, and determined that the proposals were feasible.[28] We noted that Dublin Airport has conducted analysis which has led it to conclude that, for S23, the T2 departing capacity may be less than that which has previously been declared (in the context

[28] https://www.aviationreg.ie/_fileupload/s18/Decision%20Summer%202018%20Coordination%20Parameters(1).pdf

where the runway capacity was in any case the constraining factor on overall airport capacity).

4.9 Terminal 1 has longer lanes, newer technology, and larger trays which allows a higher processing rate than (currently) in Terminal 2. Based on this analysis, Dublin Airport has proposed to reduce terminal 2 capacity from 4130 to 3600.

4.10 Dublin Airport also conducted a complementary analysis of 2019 transfer volumes, showing that 15% of passengers did not depart through security in T2. As such, it proposed to lower the load factor assumption for Terminal 2 from 95% to 85%. While the declared capacity of security would be lower, the reduction in assumed load factor offsets this, leaving the overall 'at-the-gate' capacity at 2.5% lower than the equivalent figure in the S22 declaration. The S23 schedule can still be accommodated with these changes to Terminal 2 departure parameters, with capacity available.

4.11 No Committee member objected or proposed a higher level of declared capacity. The proposed T60 parameters are not expected to be constraining on the forecast S23 schedule. We therefore see no reason not to adjust the parameters as proposed by Dublin Airport and supported by the Coordination Committee without objection.

4.12 We note the concern raised in relation to the ASU resourcing issues experienced by Dublin Airport and potential issues continuing into S23, raised primarily in the context of the discussions on the runway limits. We do not consider it likely that this issue will continue into S23. Nor that the capacity of the infrastructure should be constrained due to a staffing issue unless it would not be possible to address this issue in time for the relevant season. We note the significant improvements observed in performance across the summer. We note also that there was no objection to the proposed terminal parameters.

4.13 We also proposed to roll forward all referral parameters from S22 which are detailed in the Appendix. There was no objections or alternative proposals put forward by the Coordination Committee on this.

Responses and Final Decision

4.14 Aer Lingus supports the adjustment to the Load Factor assumption which it states aligns with Aer Lingus' own analysis. Ryanair also supports the Draft Decision proposals.

4.15 We did not receive any objection or disagreement with the Draft Decision proposals and we confirm the implementation of the proposals as per the Draft Decision.

5. Appendix: Summer 2023 Coordination Parameters

The Commission for Aviation Regulation has determined the following limits for the Summer 2023 season.

Runway Scheduling Parameters:

Runway Hourly Limits			
Time UTC	Arrivals Limit	Departures Limit	Total Limit
0000	23	25	32
0100	23	25	32
0200	23	25	32
0300	23	25	32
0400	23	25	32
0500	23	36	40
0600	20	**37**	**46**
0700	25	25	41
0800	25	25	45
0900	25	24	**48**
1000	27	27	**48**
1100	**29**	28	**51**
1200	**24**	27	**49**
1300	27	**26**	**50**
1400	23	27	**47**
1500	26	25	47
1600	**27**	29	**52**
1700	23	27	**47**
1800	23	26	**43**
1900	23	22	39
2000	25	22	38
2100	30	25	**42**
2200	28	25	32
2300	23	25	32
Totals	**591**	**633**	**997**

Maximum number of movements per 10 minute period	
Maximum Total	13
Maximum Arrivals	6
Maximum Departures	7

Passenger Terminal Parameters:

	Departures Hourly Limit	Arrivals Hourly Limit
Terminal 1	4,130	3,960
Terminal 2	3,600	3,400

Notes:

The hourly limit for passengers is rolled every 10 minutes.
Load factors of 95% are applied to Scheduled services for Terminal 1.
Load factors of 85% are applied to Scheduled services for Terminal 2.
Load factors of 100% are applied for Chartered services for both Terminal 1 and Terminal 2.

Stand Parameters:

	GA	**Non-Turnaround**		**Turnaround Stands**									**All**
	W.A.N	W.A.S	Total	5G	MRO	P1	P2	P3	P4	S.A	Triangle	Total	Total
Contact						22	11	11	21	9		74	74
Remote	8	16	24	15	6	3					5	29	53
All	8	16	24	15	6	25	11	11	21	9	5	103	127

Note: Stands defined based on ICAO Code B and C size.

Area	**Constraint**
Stands	Where demand for stands exceeds supply based on coordination allocation, flights to be referred to Dublin Airport for detailed assessment.

Referral Parameters:

Area	**Flag**
T2 Check-in Desks 1-28 (T2 Operators excluding EI)	Demand exceeds 28 desks
US Preclearance	New flights and schedule changes



Final Decision
on Winter 2023 Coordination Parameters
at Dublin Airport

4 May 2023

IRISH AVIATION AUTHORITY
ÚDARÁS EITLÍOCHTA NA HÉIREANN

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1. Executive Summary

1.1 As noted in the Draft Decision published on 14 April, the Air Navigation and Transport Act 2022 provides for the dissolution of the Commission for Aviation Regulation and the transfer of its functions to the Irish Aviation Authority (IAA), on a dissolution day to be determined by the Minister. As anticipated in the Draft Decision, dissolution day took place on 30 April 2023.

1.2 Consequently, the Economic Regulation Division of the IAA is now responsible for declaring coordination parameters at coordinated Irish airports. In this paper we set out our Final Decision on the Dublin Airport parameters for the Winter 2023 ('W23') season, which runs from 29 October 2023 to 30 March 2024 inclusive.[1] The applicable coordination parameters are laid out in the Appendix.

1.3 Our Final Decision is in line with our Draft Decision. Specifically, we make the following changes relative the Winter 2022 ('W22') parameters:

- Implement the 'W23 Wishlist' hourly runway capacity ('R60') limits, which involves a range of increases in the declared runway limits in the day hours.
- Update the within-hour 10 minute ('R10') runway limits to reflect dual parallel runway operations, in line with the S23 declaration.
- Stand counts are updated to reflect any expected changes by apron area relative to Winter 2022. Otherwise, the form of this parameter is unchanged from W22.

1.4 Other parameters are unchanged relative to W22.

1.5 We have examined and relied on a range of evidence. We commissioned fast time simulation modelling of the airfield to assess a range of scenarios relating to potential increases in the runway limits. This work was carried out by Egis. The assessment of these scenarios takes the form of a comparison of a range of airfield metrics. The results from this assessment were shared with the Coordination Committee, and the final report is published alongside this document.

1.6 We have considered other evidence with which we have been presented, or which we sought. This evidence includes modelling work conducted by Dublin Airport, and its consultants.

1.7 Our decision follows the advice received from the Coordination Committee. The Coordination Committee comprises Dublin Airport, AirNav Ireland (the Air Navigation Services Provider), and is open to all airlines operating at Dublin Airport. We received three responses to the Draft Decision, which are published alongside this paper and considered within the relevant sections.

[1] As per the worldwide slot calendar: https://www.iata.org/contentassets/4ede2aabfcc14a55919e468054d714fe/calendar-coordination-activities.pdf

2. Background

Legislation

2.1 Section 8(1) of the Aviation Regulation Act, 2001, states that the Commission for Aviation Regulation (CAR) is the competent authority in Ireland for the purposes of Council Regulation (EEC) No. 95/93, as amended ("the Slot Regulation"). The Air Navigation and Transport Act, 2022, provides for the transfer of this function to the IAA. The IAA is therefore responsible for:

- The designation of the Coordination status of Irish airports.
- Appointing a qualified schedules facilitator or coordinator, as appropriate, at airports which have been designated as Schedules Facilitated or Coordinated.
- The determination of coordination parameters at Coordinated airports in line with Article 6 of the Slot Regulation, taking account of relevant technical, operational and environmental constraints as well as any changes thereto.
- Deciding whether to approve Local Guidelines proposed by the Coordination Committee.

2.2 Dublin Airport is designated as Coordinated by the IAA. Airport Coordination Limited (ACL) is the appointed coordinator.

2.3 Under Article 5 of the Slot Regulation, one of the roles of the Coordination Committee is to advise the IAA on the coordination parameters to be determined in accordance with Article 6. The IAA attends Coordination Committee meetings as an observer.

2.4 Article 6(1) states that the determination of the parameters '*shall be based on an objective analysis of the possibilities of accommodating the air traffic, taking into account the different types of traffic at the airport, the airspace congestion likely to occur during the coordination period and the capacity situation'*. Thus, the determination of the parameters is a forward-looking projection in which we must take account of expected demand, capacity (including airspace capacity), and relevant constraining factors, during the relevant season, in an objective manner. This is primarily assessed through simulations of the operation of a forecast W23 flight schedule at the airport.

2.5 Article 6(3) of the Slot Regulation details the required interaction between the IAA and the Coordination Committee:

'*The determination of the parameters and the methodology used as well as any changes thereto shall be discussed in detail within the coordination committee with a view to increasing the capacity and number of slots available for allocation, before a final decision on the parameters for slot allocation is taken. All relevant documents shall be made available on request to interested parties.'*

2.6 In that regard, we consider that in taking account of relevant constraints when

issuing a capacity declaration, we ought to tend towards a maximal rather than minimal approach as regards declaring the airport capacity parameters. This is because of the requirement that discussion within the coordination committee is "*with a view to increasing the capacity and number of slots available for allocation*." This framing of the determination of the parameters should be given further weight where a parameter is expected to have a constraining effect on demand, given that Article 6(1) requires the determination to be based on the '*possibilities of accommodating the air traffic'.*

2.7 Subsequent sections of this paper detail how these requirements were met by the IAA.

Coordination Committee Engagement Process

2.8 To help inform the decision on the parameters, we engaged Egis to carry out simulations of the expected flight schedule for W23, using the Fast Time Simulation model of the apron, airfield, and airspace in the Dublin Airport TMA (Terminal Manoeuvring Area). This model was originally developed for us by Egis in 2017 and has been used for various simulation exercises since, both in relation to the determination of coordination parameters and also to assess the likely impact of airfield projects proposed by Dublin Airport as part of the Airport Charges determination process.

2.9 Prior to running the W23 simulations, Egis re-validated the model. This involves simulating the flight schedule on a recent day of operations, and comparing the simulated airfield metrics (such as taxi time durations and runway throughput) with actual observed metrics on the same day. If necessary, adjustments are made to the model and the process is repeated until a satisfactory result is obtained whereby the model is replicating the actual operation with a sufficient degree of accuracy.

2.10 Airlines were asked to submit growth plans for Winter 2023 to ACL. Analysis carried out by ACL indicated that increases in the runway limits would be required to ensure that these plans could be fully facilitated.

2.11 Dublin Airport proposed a number of changes to the hourly runway (R60) limits relative to W22, informed by the analysis carried out by ACL, but reduced in scope.[2] This set of changes, summarised in Table 2.1, is termed the W23 Wishlist. There was no proposal for any changes in runway capacity in the hours not listed in Table 2.1.

2.12 Dublin Airport noted the following in relation to its proposal:

- With the North Runway available, the primary capacity constraint shifts from runway to stands/gates. Proposed additional aircraft movements

[2] All references to times or hours are in UTC 24 hour format, unless stated otherwise. Where a reference is made to a particular hour, such as the 0500z hour, this refers to the time period one hour in length commencing from the stated time. To give an example, the 0500z hour spans from 5 am to 6 am UTC. During the winter season, UTC time aligns with Local time.
In each hour, a requested departure slot must not bust the hourly Departures limit or the hourly Totals limit, while a requested arrival slot must not bust the hourly Arrivals limit or the hourly Totals limit.

must fit on available stands, which is also necessary to enable modelling of the flight schedule through the full airfield and thus properly test the impact of potential runway limits.

- As the North Runway operations continue to bed in, it is prudent not to increase capacity by more than c10% in the busiest hours.

Table 2.1: Wishlist Proposal for Winter 2023

UTC Hour*	Departures	Arrivals	Totals
0700	+4		+6
0800	+1		+1
1000	+1	+2	+2
1100	+2		+2
1200		+2	+3
1300	+1	+1	+2
1400	+1	+1	+2
1700	+1	+2	+2
1800	+1	+2	+3
1900	+1	+1	+2
2200		+3	+3
Total	**+13**	**+14**	**+28**

Source: Coordination Committee

2.13 Information provided by airlines was used to develop an anticipated flight schedule on a busy day in Winter 2023, 'the W23 Schedule'. The operation of the W23 Schedule was simulated by Egis. To isolate the effect of a potential decision to adjust the R60 parameters as proposed above, we asked Egis to coordinate the W23 Schedule according to both the proposed Winter 2023 Wishlist limits, and alternatively the current Winter 2022 runway limits. Comparisons were provided between simulated taxi times, ground delay and runway holding delay. Further detail and results of this analysis is set out in Section 3, and the results of the Egis simulations are published alongside this document.

2.14 In relation to the passenger terminal (PTB) parameters, Dublin Airport proposed to make no changes relative to W22 in respect of either the departures or arrivals limits. It noted that, as the current C3 security screening equipment trial is ongoing, the departure parameters should not be modified until the true benefits of this new technology can be identified. It did not identify any material changes in respect of arrivals capacity. In both cases, it identified that the Wishlist demand can be accommodated within the existing W22 limits, i.e. the PTB limits are not expected to be a constraining factor on the allocation of slots.

2.15 No other changes were proposed relative to the Winter 2022 limits, except updating the stand count to reflect expected changes in the count relative to Winter 2022.

2.16 The pre-meeting of the Coordination Committee took place on 15 March 2023. Ahead of the initial meeting, the Egis simulation modelling results were circulated. Dublin Airport also provided various pieces of analysis and modelling results to Committee members ahead of the initial meeting, namely:

- An update on actual airfield and security queue performance during Winter 2022 compared to Winter 2019 (November to February), prospective projects expected to be delivered for Winter 2023, projects that are expected to be under construction in Winter 2023, and potential operational changes which may be in place for Winter 2023.
- Simulation modelling carried out by Dublin Airport, and for Dublin Airport by ARUP.
- An update from ACL.
- Proposed coordination parameters for Winter 2023.

2.17 The Coordination Committee met again on 27 March to produce advice for the IAA in respect of W23.

Coordination Committee Vote

2.18 Coordination Committee members voted on the proposed parameters. Voting rights for Committee members are set out in the Coordination Committee constitution. A set number of votes are allocated to Dublin Airport and AirNav Ireland (the ANSP), with the rest allocated to airlines based on the number of movements flown at Dublin Airport in the preceding year. Only those present (online or in person) can vote.

2.19 It is important to note that we consider the voting process to be an indicative part of the Coordination Committee's advice to the IAA, rather than constituting an "election" of the parameters. As part of the process, we have sought to take into account all positions set out by Coordination Committee members as well as any associated comments or evidence relevant to the parameter declaration.

2.20 The votes on the proposed R60 limits are set out in Table 2.3 below. There was unanimous support for the proposals for the hours 1000 to 1800. There were mixed views on the appropriate runway parameters for the hours 0700, 0800, 1900, and 2200, with Dublin Airport, AirNav Ireland, and a number of airlines supporting the proposals and other airlines not supporting them. Among those who did not support the proposals, Aer Lingus stated that the North Runway is still operating reduced hours from 0900 to 1800, rather than 0700 to 2300 as previously planned. Aer Lingus considers that, while it is planned to extend the hours from June this year, the risk of further delay to that timeline means that it is not appropriate to add capacity in hours outside the current operational period. British Airways and United Airlines identified concerns around capacity in the 0700 and 0800 hours, including stand occupancy.

2.21 No changes were proposed within the Committee in relation to any hour other than those listed below.

2.22 The R10 limits were proposed to be updated in line with S23 to reflect dual runway operations. No other changes to airfield limits were proposed, other than updating the stand counts within the stand parameter to reflect changes in these counts, as usual.

Table 2.3: Coordination Committee votes on proposed changes to hourly runway limits

Member	Votes	0700	0800	1000	1100	1200	1300	1400	1700	1800	1900	2200
Aer Lingus	280	N	N	Y	Y	Y	Y	Y	Y	Y	N	N
AirNav Ireland	20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
British Airways	37	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Dublin Airport	40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
DHL	6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Emerald	64	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FedEx	5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
KLM	17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lufthansa	22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ryanair	475	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Swiss	10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
TUI	8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
UPS	5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
United	11	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total in Favour		672	709	1000	1000	1000	1000	1000	1000	1000	720	683
% in Favour		**67%**	**71%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**72%**	**68%**

Source: Coordination Committee.

2.23 The Committee then voted on Dublin Airport's proposal to roll forward the terminal building parameters. The results are set out in Table 2.4.

Table 2.4: Coordination Committee votes on proposed Terminal limits

Member	Votes	Yes	No
Aer Lingus	280	☑	
AirNav Ireland	20	☑	
British Airways	37	☑	
Dublin Airport	40	☑	
DHL	6	☑	
Emerald	64	☑	
FedEx	5	☑	
KLM	17	☑	
Lufthansa	22	☑	
Ryanair	475		☑
Swiss	10	☑	
TUI	8	☑	
UPS	5	☑	
United	11	☑	
Total		**525**	**475**

Source: Coordination Committee

2.24 The advice from the Coordination Committee is therefore to make no changes to the terminal parameters, with Ryanair opposed to this proposal on the ground that Terminal 1 winter parameters should be in line with summer, and that the winter parameters are being artificially constrained.

2.25 Thus, overall, the advice of the Coordination Committee is to implement the W23 Wishlist changes to the R60 limits, update the stand counts, and otherwise make no changes to the parameters.

3. Airfield Coordination Parameters

3.1 This section addresses, in turn:

- Runway parameters
- Stand parameters

3.2 In line with the majority advice from the Coordination Committee, we have implemented the Wishlist adjustments to the W22 hourly runway limits ('R60'), as set out in Table 3.1.

Table 3.1: Changes to runway limits from Winter 2022

UTC Hour*	Departures	Arrivals	Totals
0700	+4		+6
0800	+1		+1
1000	+1	+2	+2
1100	+2		+2
1200		+2	+3
1300	+1	+1	+2
1400	+1	+1	+2
1700	+1	+2	+2
1800	+1	+2	+3
1900	+1	+1	+2
2200		+3	+3
Total	**+13**	**+14**	**+28**

Source: CAR

3.3 We adjust the 10 minute runway limits ('R10') in line with the proposal of Dublin Airport and AirNav Ireland, to which there were no objections.

3.4 We retain the stand parameter as a hard constraint. Where demand for stands exceeds supply as per the count in the appendix, movements are referred to Dublin Airport for detailed assessment.

Runway Capacity

3.5 In this subsection, we consider runway capacity limits.

Egis Airfield Modelling

3.6 As described above, Egis first validated the airfield model and then simulated the W23 flight schedule under the following two scenarios:

- Rolling forward the W22 R60 limits, i.e. making no changes to the limits compared to those in place for W22.

- Implementing the Wishlist adjustments to the W22 limits.

3.7 The model validation process was based on 8 January 2023. On this day 100% of operations were westerly, with the North Runway 28R operational for departures between 0900 and 1800.

3.8 The simulated metrics (taxi out times, runway throughput, counts of aircraft coming on block, off block, lifting off and touching down) show a close match with the actual data both in magnitude and daily profile. Across the day, the difference between the average simulated and average real taxi out time is 9 seconds, with the simulation generating slightly lower taxi times than were observed in reality.

3.9 Taxi out time measures the time elapsed from the aircraft coming off blocks until it crosses the runway stopbar to begin its take-off roll. Departure ground delay is the accumulation of all delay experienced in the same period, i.e. all components of taxi-out time other than unimpeded taxi-time. The estimated effect of proposed airfield capacity increases on these metrics is, in our view, the best way to assess the physical and operational ability of the airfield to deliver a flight schedule.

3.10 Efficient towing of aircraft occurs in the model. Taxiway, towing, runway, and runway exit usage restrictions and patterns have been implemented in the model. Given the close match in the model validation outputs, it is our view that no significant airfield capacity affecting element has been omitted from the model.

3.11 Airfield infrastructure was updated in the model, based on expected situation during W23 in relation to taxiway closures for works and projects expected to be complete. No changes are expected in respect of operating procedures for minimum aircraft separations.

3.12 In both scenarios, it is presumed that the Winter 2023 schedule of increased demand materialises as expected. We have previously observed a general pattern whereby airlines may accept sub-optimal slots (whether in relation to timing, series fragmentation, or both) in order to meet demand for an operation. In order to capture this trend, our baseline scenario assumes that this redistribution effect occurs, with these new services operating at the nearest available time, given the effective runway limits for that scenarios, in the simulation.

3.13 The Winter 2023 flight schedule to be modelled was based on expected W23 demand, but also with sufficient operations to properly test out the proposed R60 capacity increases. It is based on the schedule of 8 January 2023, and then contains a total of 780 flights of which over 100 are new operations. Most of these movements could be accommodated at the times requested without any changes to the runway limits.

3.14 This means that some of the modelled operations may not materialise in W23 and thus the schedule can be considered as an aggressive growth scenario, with a likelihood that the performance metrics produced by the model may be

conservative relative to those likely to transpire if growth is weaker. Nonetheless, we consider it important to test out the potential impact of a decision to increase the capacity. To isolate the effect of a decision to implement the Wishlist relative to maintaining the W22 limits, we asked Egis to simulate the W23 Schedule coordinated according to the wishlist scenario and separately according to a baseline scenario in which no changes are made to the limits.

3.15 Table 3.2 summarises the results of the W23 Wishlist and W22 limits scenario simulations, overall and in terms of local averages across various parts of the day, as provided to the Coordination Committee. Further details are set out in the Egis simulations published alongside. For these simulation scenarios, the updated R10 limits are included as proposed by Dublin Airport and AirNav Ireland. These limits have the effect of preventing within-hour bunching.

Table 3.2: Departure Taxi Out Time

Time (UTC)	W23 Wishlist scenario	W22 limits scenario	Difference
Average (0530-0900)	00:12:24	00:13:12	- 00:00:48
Average (0900-2000)	00:12:36	00:12:42	-00:00:06
Average (2000-2130)	00:12:42	00:11:54	+00:00:48
Daily average	00:11:36	00:11:42	-00:00:06
Peak	00:14:36	00:14:48	-00:00:12

Source: Egis, Slide 21. Taxi times in minutes and seconds.

Peak times refer to the window with the highest average value. Values are in hours, minutes and seconds.

3.16 In summary, relative to maintaining the Winter 2022 limits unchanged, the W23 Wishlist limits are expected to lead to:

- No material impact on taxi-out times on average across the day, or on the peak taxi-out time.
- A shorter morning peak due to W22 limits pushing more operations into earlier hours, such as between 0530 and 0600.
- An increase in average taxi out time of 48 seconds between 2000 and 2100, due to the higher number of movements permitted under the W23 Wishlist limits and the knock-on effect of these.
- No material impact on taxi-in times.

3.17 Given the discussions within the Coordination Committee on the risk that the North Runway operating hours would not be extended in June as planned, we asked Egis to run a sensitivity under which the North Runway was operational during 0900-1800 only. To assess the impact of a potential scenario whereby the extension of the North Runway operational hours to 0700-2300 would be delayed, Egis simulated the W23 Wishlist scenario but with the North Runway only operational from 0900-1800. The results are displayed at slides 28 and 29.

3.18 The results show the primary impact of the shorter operational window being in

the hours directly affected:

- Closure of the North Runway between 0700 and 0900 increases the peak taxi-out time from 14.5 minutes at 0800 to just over 18 minutes at 0900.
- Closure of the North Runway at 1800 results in a second peak of taxi-out times, again close to 18 minutes, at 1930.

3.19 In the late evening, there is then a secondary effect whereby a higher number of arrivals causes a longer departure queue, albeit for the small number of departing aircraft operating at that time.

Other Modelling

3.20 Dublin Airport commissioned ARUP to carry out simulation modelling on its behalf, which was also presented to the Coordination Committee. Dublin Airport also presented the results of its own modelling. These models, especially the ARUP model, display similar results to Egis as regards daily average taxi-out times, and the daily profile.

3.21 We consider that this provides a useful cross-check and cross-validation of the simulation modelling exercises.

Taxi Out times and On Time Performance (OTP) in Winter 2022

3.22 At the Coordination Committee pre-meeting, Dublin Airport provided an update on outturn operational performance in Winter 2022 compared to Winter 2019, from November to February inclusive. As noted in our Summer 2023 decision, this overview should be caveated by noting that trends across a season of single runway operations (such as Winter 2019) will be less comparable with the dual parallel operations now in place.

3.23 On Time Performance (OTP) in November and December 2022 remained significantly worse than the corresponding months of 2019. The gap narrowed in January, and by February this year, OTP has improved to a level slightly better than Winter 2019. Overall, across the four months, Arrival OTP is down by 12 percentage points and Departure OTP down by 13 percentage points. As we have noted previously, there are many factors which influence OTP at Dublin Airport other than those which relate to airport capacity. In both seasons, delay coded to Aircraft Rotation is the most significant contributor.

3.24 Average taxi-out times are in line with the performance seen in Winter 2019, at 13 minutes, which we note is also in line with the simulation modelling set out above. Average first wave taxi-out times (with the North Runway not yet operational for the first wave) have been 1 minute higher than in 2019.

Draft Decision

3.25 Under the Slot Regulation, we are required to review the parameters with a view to increasing the capacity and number of slots available for allocation, based on an objective analysis of the possibilities of accommodating the air traffic. In our Draft Decision, we thus proposed to amend the hourly runway limits in

accordance with the W23 Wishlist, for the following reasons:

- The evidence from the Egis simulations suggests that the additional capacity proposed can be accommodated by the parallel runway system without any material causative impact on delay.
- Based on the Coordination Committee vote, the advice of the Committee is to declare runway limits in line with the Winter 2023 Wishlist.
- The evidence suggests that, even if the North Runway operational hours are not extended as planned before W23, the additional runway capacity will not lead to an unacceptable level of deterioration in performance.

3.26 We noted that the disagreement within the Coordination Committee relates to the hours in which the North Runway was expected to be operational by now, but is not, namely 0700 to 0900 and 1800 to 2300, and that it is planned to extend the hours in June. We stated that both Dublin Airport and AirNav Ireland expect to be able to facilitate the June date for extended operational hours. That date is four months before the start of W23.

3.27 We said that, while we have no reason to believe that the North Runway will not operate as planned between 0700 and 2300 in W23, we agree with Aer Lingus that it is prudent to consider a contingency scenario in which the operating hours remain at 0900 to 1800. As noted above, based on the Egis simulations, it is apparent that maintaining the shorter window would have a significant impact in the relevant hours, increasing the peak taxi-out time by 3.5 minutes, to 18 minutes. However, we did not consider this impact to be so significant as to warrant not declaring the additional capacity. We noted that the wishlist capacity ultimately declared for the last seasonal declaration before Covid-19, the S20 capacity parameters, showed a peak taxi-out time of over 26 minutes. The peak taxi-out time modelled in respect of the parameters declared for S23 was 19 minutes.

3.28 It is important to note that, while additional movements would contribute to delay in a scenario where the North Runway operational hours are not extended, much of this impact on taxi-out times is likely to materialise regardless of whether or not the additional R60 capacity is declared.

3.29 We concluded that 1) we expect that the hours will be extended by W23, and 2) even if they are not, the impact of that does not warrant withholding the proposed capacity, and 3) much of that effect on taxi times in such a scenario is likely to materialise regardless of the release of the proposed capacity. We thus proposed to declare the additional capacity in line with the wishlist proposal and the majority advice of the Coordination Committee.

3.30 As with the Summer 2023 declaration, we agreed with Dublin Airport that it is prudent to limit the initial North Runway capacity release to preclude potentially excessive bunching of the schedule, as the relevant operational stakeholders become acclimatised to the changed operation. We also noted that further additional capacity is not likely required to accommodate the air traffic.

3.31 In line with Condition 4 of the North Runway planning permission, which limits

the use of the crosswind runway to '*essential occasional use'*, we noted that our modelling assumes no use of the crosswind runway 16/34 as an active runway. As per the Summer 2023 declaration, we continue to take account of Condition 3 in respect of our simulations of the operation of the main runways. We also updated the Runway 28R Standard Instrument Departures (SIDs) based on the change put into effect from 23 February 2023.[3]

3.32 As set out in the S23 declaration decision, we noted that any potential Operating Restrictions within the meaning of Regulation (EU) No 598/2014 ought to be set out such that there is clarity on the scope and duration of the legally enforceable constraining factor which it will represent during a given scheduling season.[4]

3.33 Where this is not case, as particularly noted in the S23 decision in respect of Condition 5 of the North Runway planning permission, and should a determination subsequently be made such that an Operating Restriction falls to be enforced in that scheduling season in a manner which requires a reduction in operations, we noted that it may be necessary for us to review the affected parameters in the prevailing declaration and/or for parties not to use their allocated slots. Pending any such determination, we suggested that the R60 parameters in the referenced night hours (2300-0700 local) would again remain in line with the pre-existing single (southern) runway capacity for the W23 declaration.

Submissions Received on Draft Decision

3.34 Consistent with the view it expressed within the Coordination Committee, Aer Lingus does not support the release of R60 capacity outside the hours in which the North Runway is currently operational, namely 0900 to 1800. It suggests that our proposal is '*presumably on the hope that the runway will be open from 07:00 until late night by next winter'*, as expressed by Dublin Airport, and states that AirNav Ireland did not commit to this within the Coordination Committee. Aer Lingus notes that the same approach was taken for the Summer 2023 declaration, and new slots have been allocated at times when the new runway is not yet operational.

3.35 Aer Lingus disagrees with our comparison of modelled delays between the declared capacities for Summer 2020 and Summer 2023, noting that there is no real-world experience to validate the assertion. It notes that the pandemic meant that only a fraction of the originally planned flights operated in Summer 2020, and Summer 2023 capacity is yet to peak.

3.36 Dublin Airport refers to its response to the S23 capacity declaration and reiterates that coordination parameters should be consistent with an appropriate interpretation of the terms of the North Runway Planning Permission and Condition 5. It acknowledges that the conditions attached to planning permission can give rise to complex questions of interpretation and

[3] https://www.dublinairport.com/corporate/north-runway/latest-news/2023/02/21/north-runway-revised-standard-instrument-departures-from-february-23-2023
[4] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0598

notes that the interpretation of Condition 5 has been addressed in previous decisions on coordination parameters.

3.37 Dublin Airport again welcomes our view set out at paragraph 3.33 above, and emphasises that any decision of a competent authority as to the interpretation and application of Condition 5 may need to be implemented within a relatively short time frame. Accordingly, Dublin Airport believes that we should keep the matter under review and put in train contingency planning in advance of any such potential decision, noting that there is a precedent set during Covid-19 with Local Rule A, which could be used as a basis for applying a mandated reduction in capacity at Dublin Airport, should the scenario arise.

3.38 Dublin Airport notes that it has received a warning letter from Fingal County Council ("FCC") under section 152 of the Planning and Development Act, 2000 as amended, in respect of a number of operational planning issues which relate to the North Runway.

3.39 Liam O'Grádaigh, on behalf of St Margaret's the Ward residents group, also reiterates his views expressed ahead of the S23 parameters decision as to the proper interpretation of the Operating Restriction contained within Condition 5, in particular that it should be interpreted to apply on a year-round basis, and why that is so.

3.40 Liam O'Grádaigh also reiterates the material he previously provided in relation to the health implications of changes to Conditions 5 and 3(d). He states that it is not for CAR (now IAA) to decide how to interpret these conditions which relate to public health, as we do not have the expertise nor the legal remit. This is for the planning authority and ANCA. He notes that planning enforcement investigations are ongoing by Fingal County Council (FCC) in relation to a number of North Runway planning conditions and therefore our decisions for Summer 2023 and Winter 2023 are premature pending the outcome of these investigations.

3.41 Liam O'Grádaigh also refers to the Restriction in Condition 3 of the Terminal 2 planning permission (PL06F.220670), which provides that the combined '*capacity'* of Terminal 2 as permitted together with Terminal 1 shall not exceed 32 million passengers per annum. He notes that the first 3 months of 2023 are ahead in passenger numbers compared to the equivalent 3 months in 2019, and thus the capacity should not provide for slots exceeding the '*capability to handle more than 32m passengers*.'

3.42 Liam O'Grádaigh reiterates that Article 11 of SI No. 645 of 2003, which transposed Council Directive No 2002/30/EC, required that the airport authority notify interested parties including the IAA, of the introduction of Operating Restrictions in line with the Balanced Approach. The IAA was then, in turn, required to inform the Minister, EU Commission and other Member States. He considers that, if aircraft operators are suggesting that these Operating Restrictions are not legitimate based on non-adherence to Article 11, then it could also be argued that Dublin Airport's application to revoke and amend the Operating Restrictions is premature as the Operating Restrictions are not in effect. He suggests that we should question daa if they did not perform their

duty under SI No. 645 of 2003, and that we should follow up with the IAA to see if they have informed the Minister, EU Commission and other Member States.

Final Decision

3.43 In relation to the R60 capacity outside the hours in which the North Runway is currently operational, we would not agree with the characterisation of the likelihood that the day-time hours will be extended for W23 as a '*hope*'. It is the intention, as confirmed to us by both Dublin Airport and AirNav Ireland, for the hours to be extended from June. While we agree with Aer Lingus that it is possible that there will be a further delay relative to the original planned date of March this year, our analysis described in the Draft Decision suggests that, even if the hours are not extended for W23, any compounding effect on performance metrics generated by the additional permitted movements is not likely to be significant enough to warrant withholding the new capacity.

3.44 While we know that much of the S20 capacity was ultimately not operated, the comparison was only to contextualise the results of the simulations even in a scenario whereby the North Runway hours are not extended for W23. We note that the same point could be made with reference to the S19 simulation results, which relate to a season which was operated. The peak taxi-out time in the scenario which underpinned the S19 declaration was 27 minutes, relative to 18 minutes in the W23 simulations scenario where the North Runway hours are not extended.

3.45 We are thus not persuaded to change our approach to the R60 capacity in the day hours.

3.46 We note the further comments of Dublin Airport and Liam O'Grádaigh in respect of the potential capacity impact of Operating Restrictions deriving from the North Runway and/or T2 planning permissions. We continue to agree with Liam O'Grádaigh, as we set out in our S23 capacity decision, that it is not for us to determine the status of disputed, unclear and/or unnotified Operating Restrictions which apparently pose complex questions of planning, EU, and International law. We did seek to ascertain whether the notification and consultation requirements have yet been carried out, as suggested by Liam O'Grádaigh. We understand that the notifications referenced by Liam O'Grádaigh did not take place before SI No. 645 of 2003 was repealed. Notification requirements are now governed by Regulation (EU) No 598/2014 and the Aircraft Noise (Dublin Airport) Regulation Act 2019.

3.47 Again, we agree with Liam O'Grádaigh and Dublin Airport that it is important to consider plans for a scenario in which any further Operating Restrictions are determined to be effective and should fall to be enforced in the scheduling season and in a manner which requires a reduction in operations. Such a scenario might lead to a requirement to amend the capacity declaration, and/or a result that air carriers may not be able to use certain allocated slots for the reason contemplated at Article 10.4(b) of the Slot Regulation, namely '*interruption of air services due to action intended to affect these services which makes it practically and/or technically impossible for the air carrier to carry out operations as planned*'.

3.48 As referenced by Dublin Airport, Local Rule A provides some precedent in relation to how a capacity reduction might be allocated across aircraft operators.[5] We would, however, also expect to receive further advice from the Coordination Committee in such a scenario.

3.49 We note the update from Dublin Airport in respect of its engagement with FCC and ask that Dublin Airport keep the Coordination Committee and the IAA informed of any developments in this regard. In relation to the suggestion from Liam O'Grádaigh that it is premature to declare capacity while FCC investigations are ongoing, we note that the W23 capacity must be declared in line with our timing obligations under the Slot Regulation.

3.50 Thus, consistent with each capacity declaration since S22, for now, no changes are made to the R60 limits which were in place prior to completion of the North Runway. This again means that no dual runway capacity has been added between 2300 and 0700 local, meaning that the North Runway cannot facilitate more flights in this period than were previously possible under the single Runway 28 based declaration.

3.51 Consequently, our Final Decision on the W23 runway parameters remains in line with our Draft Decision and in line with the advice of the Coordination Committee.

Parking Stands

3.52 In the Draft Decision, we proposed to retain the hard constraint on stands, while updating the stand count relative to W22 to take account of any changes to stand availability in the various apron areas. Dublin Airport proposed maintaining the current parameter while updating the count, as usual, to reflect seasonal changes. There was no objection or alternative proposal made within the Coordination Committee.

3.53 No respondent made any representation in respect of the stand parameter. We confirm our proposal from the Draft Decision.

[5] https://www.iaa.ie/docs/default-source/car-documents/local-rule-a-(dublin)-final-(1).pdf?Status=Master&sfvrsn=8a014f3_0

4. Terminal Building Coordination Parameters

4.1 As proposed in the Draft Decision, we have decided to roll forward the W22 rolling hourly PTB limits, which are set out in Table 4.1, to the W23 season.

4.2 We also maintain the load factor assumptions of 85% for scheduled services in Terminal 1, and 95% for charter services. We maintain the referral parameters in relation to Terminal 2 check-in desks and US Preclearance as per the W22 capacity.

Table 4.1: Hourly Terminal Limits – W23

	Departures	Arrivals
Terminal 1	3,700	3,550
Terminal 2	3,700	3,050

Source: IAA

Proposed Hourly Limits – Dublin Airport

4.3 Dublin Airport proposed to roll forward the PTB hourly limits from W22. It noted that, with the trial of the C3 machines ongoing and uncertainty as to the full extent of the benefits which this new technology will bring to the security processors, it is prudent to retain the current declared capacity until the benefit can be fully quantified. Dublin Airport also noted that the PTB limits are unlikely to be a constraining factor on the allocation of slots in W23, with the W23 Wishlist demand estimated to be 74% of the current available capacity.

4.4 This proposal was supported by all parties with the exception of Ryanair, who considers that the parameters should be in line with those declared for summer and thus the winter parameters are being artificially constrained.

Proposed Referral Limits – Dublin Airport

4.5 Dublin Airport proposed retaining the referral parameter for Terminal 2 check-in desks 1-28 (Terminal 2 operators excluding Aer Lingus) – where demand exceeds 28 desks. It also recommended retaining the referral for US Preclearance, which applies to any new flights, or time changes to pre-existing flights, intending to use this facility.

4.6 There were no objections or alternative proposals in relation to these limits.

Draft Decision on Terminal Capacity Parameters

4.7 In the Draft Decision, we noted Ryanair's objection to the PTB parameters. We said that, given the potential differences between processing rates in summer and winter, the fact that the summer parameters are currently higher is not, alone, a compelling piece of evidence to increase the winter parameters.

4.8 We agreed with the proposal of Dublin Airport to maintain the existing limits for W23, in the context of uncertainty as to the capacity improvement which will be provided for by the C3 equipment during W23 and where the proposed T60

parameters are not in any case expected to be constraining on the allocation of slots. We noted that the majority advice of the Coordination Committee is to maintain the existing limits. We noted that, once the benefits of C3 can be fully identified, this will likely lead to an increase in the declared capacity for future seasons, as contended for by Ryanair.

4.9 We also proposed to roll forward all referral parameters from W22, noting that there were no objections or alternative proposals put forward by the Coordination Committee.

Responses and Final Decision

4.10 Aer Lingus supports the proposal to maintain the current limits, stating that it is too early in the deployment of the new C3 scanning machines to fully understand the processing and capacity benefits.

4.11 We note Aer Lingus' continued support for the proposed W23 PTB parameters and confirm our Draft Decision in that respect.

5. Appendix: Winter 2023 Coordination Parameters

The Irish Aviation Authority has determined the following scheduling limits for the Winter 2023 season at Dublin Airport.

Runway Scheduling Parameters:

Runway Hourly Limits			
Time UTC	Arrivals Limit	Departures Limit	Total Limit
0000	23	23	32
0100	23	23	32
0200	23	23	32
0300	23	23	32
0400	23	23	32
0500	23	25	32
0600	23	35	40
0700	21	**35**	**46**
0800	25	**24**	**45**
0900	24	25	42
1000	**25**	**25**	**43**
1100	28	**28**	**50**
1200	**28**	28	**49**
1300	**25**	**28**	**45**
1400	**25**	**25**	**42**
1500	23	27	43
1600	24	26	46
1700	**26**	**28**	**49**
1800	**26**	**27**	**46**
1900	**24**	**25**	**40**
2000	24	24	39
2100	25	23	39
2200	32	23	42
2300	23	23	32
Totals	**589**	**619**	**970**

Maximum number of movements per 10 minute period- Dual runway operations	
Maximum Total	13
Maximum Arrivals	6
Maximum Departures	7

Maximum number of movements per 10 minute period- Single runway operations (2300-0659)	
Maximum Total	9
Maximum Arrivals	6
Maximum Departures	6*
Exception: Maximum Departure Limit is 7 movements at 0600, 0610, 0620, 0630, 0640, 0650	

Passenger Terminal Parameters:

	Departures Hourly Limit	Arrivals Hourly Limit
Terminal 1	3,700	3,550
Terminal 2	3,700	3,050

Notes:

1) The hourly limit for passengers is rolled every 10 minutes.
2) Load factors of 85% are applied to Scheduled services for Terminal 1.
3) Load factors of 85% are applied to Scheduled services for Terminal 2.
4) Load factors of 95% are applied for Chartered services for both Terminal 1 and Terminal 2.

Stand Parameters:

	GA	**Non-Turnaround**		**Turnaround Stands**									**All**
	W.A.N	W.A.S	Total	5G	MRO	P1	P2	P3	P4	S.A	Triangle	Total	Total
Contact						22	11	11	21	9		**74**	**74**
Remote	8	16	**24**	15	6	3					5	**29**	**53**
All	8	16	**24**	15	6	25	11	11	21	9	5	**103**	**127**

Note: The table represents NBE stand capacity.

Area	**Constraint**
Stands	Where demand for stands exceeds supply based on coordination allocation, flights to be referred to Dublin Airport for detailed assessment.

Referral Parameters:

Area	**Flag**
T2 Check-in Desks 1-28 (T2 Operators excluding EI)	Demand exceeds 28 desks
US Preclearance	New flights and schedule changes



Final Decision
on Summer 2024 Coordination Parameters
at Dublin Airport

3 October 2023

IRISH AVIATION AUTHORITY
ÚDARÁS EITLÍOCHTA NA HÉIREANN

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1. Executive Summary

1.1 The IAA is responsible for declaring coordination parameters at coordinated Irish airports. In this paper we set out our Final Decision on the Dublin Airport parameters for the Summer 2024 ('S24') season, which runs from 31 March to 26 October 2024 inclusive.[1] The applicable coordination parameters are laid out in the Appendix.

1.2 We have made the following changes relative the Summer 2023 ('S23') parameters:

- Other than in the 0700z hour, implement the 'Scenario C' hourly runway capacity ('R60') limits, which involves a range of increases in the declared runway limits in the day hours. In the 0700z hour, implement 'Scenario B'.
- Stand counts are updated to reflect any expected changes by apron area relative to Summer 2023. Otherwise, the form of this parameter is unchanged from S23.

1.3 The Final Decision remains in line with the proposals in the Draft Decision.

1.4 Other parameters are unchanged relative to S23.

1.5 We have relied on a range of evidence. We commissioned fast time simulation modelling of the airfield to assess a range of scenarios relating to potential increases in the runway limits. This work was carried out by Egis. The assessment of these scenarios takes the form of a comparison of a range of airfield metrics. The results from this assessment were shared with the Coordination Committee, and the final report is published alongside this document.

1.6 We have considered other evidence with which we have been presented, or which we sought. This evidence includes modelling work conducted by Dublin Airport and its consultants.

1.7 We received 88 representations in response to the Draft Decision, most of which relate to the question of potential Noise Related Operating Restrictions at the airport. These views, as well as our responses, are summarised in this report.

1.8 Other than in respect of providing for the T-Coding[2] of certain slots which could otherwise be allocated within the coordination parameters, our Final Decision continues to follow the advice received from the Coordination Committee. The Coordination Committee comprises Dublin Airport, AirNav Ireland (the Air Navigation Service Provider), and is open to all airlines operating at Dublin Airport.

[1] As per the worldwide slot calendar: https://www.iata.org/contentassets/4ede2aabfcc14a55919e468054d714fe/calendar-coordination-activities.pdf

[2] T-Coding refers to the allocation of Slots subject to a condition or conditions.

2. Background

Legislation

2.1 Section 8(1) of the Aviation Regulation Act, 2001, as amended, provides that the IAA is the competent authority in Ireland for the purposes of Council Regulation (EEC) No. 95/93, as amended ("the Slot Regulation"). The IAA is therefore responsible for:

- The designation of the Coordination status of Irish airports.
- Appointing a qualified schedules facilitator or coordinator, as appropriate, at airports which have been designated as Schedules Facilitated or Coordinated.
- The determination of coordination parameters at Coordinated airports in line with Article 6 of the Slot Regulation, taking account of relevant technical, operational and environmental constraints as well as any changes thereto.
- Deciding whether to approve Local Guidelines proposed by the Coordination Committee.

2.2 Dublin Airport is designated as Coordinated by the IAA. Airport Coordination Limited (ACL) is the appointed coordinator.

2.3 Under Article 5 of the Slot Regulation, one of the roles of the Coordination Committee is to advise the IAA on the coordination parameters to be determined in accordance with Article 6. The IAA attends Coordination Committee meetings as an observer.

2.4 Article 6(1) states that the determination of the parameters '*shall be based on an objective analysis of the possibilities of accommodating the air traffic, taking into account the different types of traffic at the airport, the airspace congestion likely to occur during the coordination period and the capacity situation'*. Thus, the determination of the parameters is a forward-looking projection in which we must take account of expected demand, capacity (including airspace capacity), and relevant constraining factors, during the relevant season, in an objective manner. This is primarily assessed through simulations of the operation of a forecast S24 flight schedule at the airport.

2.5 Article 6(3) of the Slot Regulation details the required interaction between the IAA and the Coordination Committee:

'*The determination of the parameters and the methodology used as well as any changes thereto shall be discussed in detail within the coordination committee with a view to increasing the capacity and number of slots available for allocation, before a final decision on the parameters for slot allocation is taken. All relevant documents shall be made available on request to interested parties.'*

2.6 In that regard, as per previous seasons, when taking account of relevant constraints in issuing a capacity declaration, we tend towards a maximal rather

than minimal approach as regards declaring the airport capacity parameters. This is because of the requirement that discussion within the coordination committee is '*with a view to increasing the capacity and number of slots available for allocation*.' This framing of the determination of the parameters is given further weight where a parameter is expected to have a constraining effect on demand, given that Article 6(1) requires the determination to be based on the '*possibilities of accommodating the air traffic'.*

2.7 Subsequent sections of this paper detail how these requirements were met by the IAA.

Coordination Committee Engagement Process

2.8 To help inform the decision on the parameters, we engaged Egis to carry out simulations of the expected flight schedule for S24, using the Fast Time Simulation model of the apron, airfield, and airspace in the Dublin Airport TMA (Terminal Manoeuvring Area). This model was originally developed for us by Egis in 2017 and has been updated regularly to include changes to infrastructure and operational procedures. It has been used for various simulation exercises since, including the determination of the capacity parameters.

2.9 Prior to running the simulations, Egis re-validated the model. This involves simulating the flight schedule on a recent day of operations, and comparing the simulated airfield metrics (such as taxi time durations and runway throughput) with actual observed metrics on the same day. If necessary, adjustments are made to the model and the process is repeated until a satisfactory result is obtained whereby the model is replicating the actual operation with a sufficient degree of accuracy.

2.10 Airlines were asked to submit growth plans for Summer 2024 to ACL. Analysis carried out by ACL indicated that increases in the runway limits would be required to ensure that these plans could be fully facilitated.

2.11 A number of changes to the hourly runway (R60) limits relative to S23 were proposed, informed by the analysis carried out by ACL, but reduced in scope.[3] This set of changes, summarised in Table 2.1, has been termed 'Scenario A' by the Coordination Committee. There was no proposal for any changes in runway capacity in the hours not listed in Table 2.1.

[3] All references to times or hours are in UTC 24 hour format, unless stated otherwise. Where a reference is made to a particular hour, such as the 0500z hour, this refers to the time period one hour in length commencing from the stated time. To give an example, the 0500z hour spans from 5 am to 6 am UTC. During the summer season, UTC time is one hour ahead of Local time. Hence, the 0500z hour spans from 6am to 7am local time.
In each hour, a requested departure slot must not bust the hourly Departures limit or the hourly Totals limit, while a requested arrival slot must not bust the hourly Arrivals limit or the hourly Totals limit.

Table 2.1: 'Scenario A' Proposal for Summer 2024

UTC Hour*	Departures	Arrivals	Totals
0600	+2		+4
0800		+2	+3
0900	+2	+2	+4
1000		+2	+4
1100	+2	+1	+1
1200	+2		+1
1300		+1	+2
1400	+2		+2
1500	+2		
1700	+1	+3	+4
2100		+1	
Total	**+13**	**+12**	**+25**

Source: Coordination Committee

2.12 Information provided by airlines was used to develop an anticipated flight schedule on a busy day in Summer 2024, 'the S24 Schedule'. The operation of the S24 Schedule was simulated by Egis. To assess the effect of a potential decision to adjust the R60 parameters as proposed above, Egis coordinated the S24 Schedule according to both the Scenario A limits, and alternatively the current S23 runway limits. Comparisons were provided between simulated taxi times, ground delay and runway holding delay. Further detail and results of this analysis is set out in Section 3, and the results of the Egis simulations are published alongside this document.

2.13 In relation to the passenger terminal (PTB) parameters, it was proposed to make no changes relative to S23 in respect of either the departures or arrivals limits. It was noted that, as the current C3 security screening equipment trial is ongoing, the departure parameters should not be modified until the true benefits of this new technology can be identified. Thus, no material changes in respect of arrivals capacity were proposed. In both cases, it was identified that the forecast demand can be accommodated within the existing S23 limits, i.e. the PTB limits are not expected to be a constraining factor on the allocation of slots.

2.14 No other changes were proposed relative to the Summer 2023 limits, except updating the stand count to reflect minor expected changes in the count relative to Summer 2023.

2.15 The pre-meeting of the Coordination Committee took place on 16 August 2023. Ahead of the initial meeting, the Egis simulation modelling results were circulated. Dublin Airport also provided various pieces of analysis and modelling results to Committee members ahead of the initial meeting, namely:

- An update on airfield performance, On Time Performance (OTP) in Summer 2023 compared to Summer 2022, prospective projects expected to be delivered for Summer 2024, projects that are expected to be under

construction in Summer 2024.

- Simulation modelling carried out by Dublin Airport, and for Dublin Airport by ARUP.
- An update from ACL.
- Coordination parameter proposals for Summer 2024.

2.16 At the pre-meeting, there were a number of suggestions for the release of additional capacity relative to Scenario A, and/or releasing less capacity than proposed. The proposals were distilled into two additional flight schedules for simulation, as shown in Table 2.2:

- Scenario B included additional capacity in the 0600z, 0700z, and 2100z hours.
- Scenario C included the scenario B capacity (with a variation between Departures and Totals in 0700z), as well as significant additional capacity in the 1900z, 2000z, and 2100z hours.

Table 2.2: Summer 2024 Scenario B and C proposals

	Scenario B			Scenario C		
UTC Hour*	Departures	Arrivals	Totals	Departures	Arrivals	Totals
0600	+3		+6	+3		+6
0700			+4	+2		+2
0800		+2	+3		+2	+3
0900	+2	+2	+4	+2	+2	+4
1000		+2	+4		+2	+4
1100	+2	+1	+1	+2	+1	+1
1200	+2		+1	+2		+1
1300		+1	+2		+1	+2
1400	+2		+2	+2		+2
1500	+2			+2		
1700	+1	+3	+4	+1	+3	+4
1900					+2	+2
2000					+2	+2
2100		+2			+3	+2
Total	**+14**	**+13**	**+31**	**+16**	**+18**	**+35**

Source: Coordination Committee

2.17 The Coordination Committee met again on 24 August to finalise its advice for the IAA in respect of S24.

Coordination Committee Vote

2.18 Coordination Committee members voted on the proposed parameters. Voting rights for Committee members are set out in the Coordination Committee

constitution. A set number of votes are allocated to Dublin Airport and AirNav Ireland (the Air Navigation Services Provider at Dublin Airport), with the rest allocated to airlines based on the number of movements flown at Dublin Airport in the preceding year. Only those present (online or in person) can vote. We note that the voting process is an indicative part of the Coordination Committee's advice to the IAA, rather than constituting an "election" of the parameters. As part of the process, we seek to take into account all positions set out by Coordination Committee members as well as any associated comments or evidence relevant to the parameter declaration.

2.19 The votes on the proposed R60 limits are set out in the appendix. There was a range of views:

- Dublin Airport and AirNav Ireland abstained, as did DHL.
- Most airlines supported different scenarios in different hours, with all four possibilities (i.e. Scenarios A, B, C, and retaining the existing S23 parameter) receiving some support.

2.20 Overall, the vote was in favour of Scenario C in all hours with the exception of the 0700z hour, in which the vote was in favour of Scenario B. No specific reasons were provided.

2.21 No changes were proposed within the Committee in relation to any hour other than those listed above. No change was proposed in respect of the 10 minute runway limits. No other changes to airfield limits were proposed, other than updating the stand counts within the stand parameter to reflect changes in these counts, as usual.

2.22 The Committee did not formally vote on the other parameters, however no changes to the terminal limits were proposed. In light of uncertainty over Condition 5 of the North Runway Planning Permission, the airline members all voted in favour of 'T-coding' any new slots allocated between 2200z and 0600z.

2.23 Thus, overall, the advice of the Coordination Committee is to implement Scenario C, except for the 0700z hour in which it recommends Scenario B, update the stand counts, provide for the 'T-coding' of certain new slots, and otherwise make no changes to the parameters.

3. Airfield Coordination Parameters

3.1 This section addresses, in turn:

- Runway parameters
- Stand parameters

3.2 In line with the majority advice from the Coordination Committee, we have decided to implement Scenario C other than in the 0700z hour in which we implement Scenario B, as set out in Table 3.1.

Table 3.1: Changes to runway limits from Summer 2023

UTC Hour	Departures	Arrivals	Totals
0600	+3		+6
0700			+4
0800		+2	+3
0900	+2	+2	+4
1000		+2	+4
1100	+2	+1	+1
1200	+2		+1
1300		+1	+2
1400	+2		+2
1500	+2		
1700	+1	+3	+4
1900		+2	+2
2000		+2	+2
2100		+3	+2
Total	**+14**	**+18**	**+37**

Source: IAA

3.3 We make no changes to the respective R10 limits for dual and single runway operations.

3.4 We retain the stand parameter as a hard constraint. Where demand for stands exceeds supply as per the count in the appendix, movements are referred to Dublin Airport for detailed assessment.

3.5 We do not include a provision for the T-coding of any new slots which, but for the existence of Condition 5 of the North Runway Planning Permission, would otherwise be allocated in line with these parameters.

Runway Capacity

3.6 In this subsection, we consider runway capacity limits.

Egis Airfield Modelling

3.7 As described above, Egis first validated the airfield model and then simulated the S24 flight schedule under the following scenarios:

- Rolling forward the S23 R60 limits, i.e. making no changes to the limits compared to those in place for S23.
- Implementing the Scenario A adjustments to the S23 limits.
- Implementing the Scenario B adjustments to the S23 limits.
- Implementing the Scenario C adjustments to the S23 limits.

3.8 The model validation process was based on 5 April 2023, using actual block times. On this day, 100% of operations were westerly.

3.9 The simulated metrics (taxi out times, runway throughput, counts of aircraft coming on block, off block, lifting off and touching down) show a close match with the actual data both in magnitude and daily profile. Across the day, the difference between the average simulated and average actual taxi out time is 18 seconds, with the simulation generating slightly higher taxi times than were observed in reality.

3.10 Taxi out time measures the time elapsed from the aircraft coming off blocks until it crosses the runway stopbar to begin its take-off roll. Departure ground delay is the accumulation of all delay experienced in the same period, i.e. all components of taxi-out time other than unimpeded taxi-time. The estimated effect of proposed airfield capacity increases on these metrics is, in our view, the best way to assess the infrastructural and operational capacity of the airfield to deliver a flight schedule.

3.11 Efficient towing of aircraft occurs in the model. Taxiway, towing, runway, and runway exit usage restrictions and patterns have been implemented in the model. Given the close match in the model validation outputs, it is our view that no significant airfield capacity affecting element has been omitted from the model.

3.12 Airfield infrastructure was updated in the model, based on the expected situation during S24 in relation to taxiway closures for works and projects expected to be complete. No changes are assumed in respect of operating procedures for minimum aircraft separations.

3.13 In each scenario, it is presumed that the Summer 2024 schedule of increased demand materialises as expected. We have previously observed a general pattern whereby airlines may accept sub-optimal slots (whether in relation to timing, series fragmentation, or both) in order to meet demand for an operation. In order to capture this trend, our baseline scenario assumes that this redistribution effect occurs, with these new services operating at the nearest available time, given the effective runway limits for that scenario, in the simulation.

3.14 The Summer 2024 flight schedule was based on expected S24 demand, but

also with sufficient operations to properly test out the proposed R60 capacity increases. It contains a total of 857 flights, of which 91 are new operations. Most of these movements could be accommodated at the times requested without any changes to the runway limits.

3.15 This level of assumed growth means that some of the modelled operations may not materialise in S24, and thus the schedule can be considered as an aggressive growth scenario, with a likelihood that the performance metrics produced by the model may be worse relative to those likely to be observed if growth is weaker. Nonetheless, we consider it important to test out the potential impact of a decision to increase the capacity. To assess the effect of a decision to implement the respective scenarios relative to maintaining the S23 limits, we asked Egis to simulate the S24 Schedule coordinated according to all four of these scenarios. All scenarios also conform to the existing R10 limits.

3.16 Table 3.2 summarises the results of the S24 Wishlist and S23 limits scenario simulations, overall and in terms of local averages across various parts of the day, as provided to the Coordination Committee. Further details are set out in the Egis simulations published alongside.

Table 3.2: Departure Taxi Out Time under S23 limits and Scenario A

Time (UTC)	Scenario A	S23 limits scenario	Difference
Average (0430-0830)	00:16:42	00:16:30	+00:00:12
Average (0830-1100)	00:13:18	00:13:06	+00:00:12
Average (1100-1730)	00:15:54	00:15:36	+00:00:18
Average (2000-2130)	00:12:48	00:12:48	00:00:00
Daily average	00:12:45	00:13:00	-00:00:15
Peak	00:22:12	00:21:24	00:00:48

Source: Egis, Slide 21. Taxi times in hours, minutes and seconds.

Peak times refer to the window with the highest average value. Values are in hours, minutes and seconds.

3.17 Ahead of the final Coordination Committee meeting, scenarios B and C were also simulated, with the results shown from slide 27 of the Egis slides. These showed no material difference with Scenario A, other than a slight further increase of the peak taxi-out time to 00:22:48 in both cases, linked to extra movements in the 0600z and 0700z hours.

3.18 In summary, relative to maintaining the Summer 2023 limits unchanged, none of the scenarios A, B, or C are expected to have a material impact on taxi-out times on average across the day. As shown above, that is consistent across most of the local averages, with the exception of the peak taxi-out time during first wave departures. That increases by 48 seconds to 00:22:12 under scenario A, and further to 00:22:48 under scenarios B and C.

Other Modelling

3.19 Dublin Airport commissioned ARUP to carry out simulation modelling on its

behalf, which was also presented to the Coordination Committee. Dublin Airport also presented the results of its own modelling. These models, especially the ARUP model, display similar results to Egis as regards daily average taxi-out times, and the daily profile.

3.20 We consider that this provides a useful cross-check and cross-validation of the simulation modelling exercises.

Taxi Out times and On Time Performance (OTP) in Summer 2023

3.21 At the Coordination Committee pre-meeting, Dublin Airport provided an update on outturn operational performance in Summer 2023 compared to Summer 2022, from April to July inclusive.

3.22 As we suggested in the S23 decision, On Time Performance (OTP) to the end of July has significantly improved in S23 compared to S22, albeit from a very low base.[4] The improvement is driven by June and July performance. As we have noted previously, there are many factors which influence OTP at Dublin Airport other than those which relate to airport capacity. Delay coded to Aircraft Rotation and En Route Air Traffic Flow Management (ATFM), which are not specifically linked to Dublin Airport capacity, remain the most significant contributors.

3.23 Across the full day, average taxi-out times to RW 28 are in line with S22. In S22, the North Runway (28R) was not yet operational during the comparison window. In S23, it was operational from 0800z until July, and then from 0600z (7am local) in July. We note that taxi-out times by apron area reflect this year-on-year change, with taxi-out times from areas nearer to RW 28R having fallen significantly, and those on the southern part of the airfield having risen significantly. Average taxi-in times are also in line with S22; conversely, these have relatively improved on the southern part of the airfield compared to the northern part.

3.24 Average first wave taxi-out times (with the North Runway not yet operational for the first wave, other than from 0600z from July) have been 1.5 minutes higher than in 2022.

Draft Decision

3.25 Under the Slot Regulation, we are required to review the parameters with a view to increasing the capacity and number of slots available for allocation, based on an objective analysis of the possibilities of accommodating the air traffic. In the Draft Decision, we proposed to amend the hourly runway limits in accordance with Scenario C with the exception of the 0700z hour for which we propose Scenario B, for the following reasons:

- The amended parameters provide for increased capacity to accommodate the expected or potential air traffic demand.
- The evidence from the simulations, which take account of infrastructural,

[4] Summer 2023 Final Decision, paragraph 3.26.

operational, and environmental constraints, suggests that the additional capacity proposed can be accommodated by the parallel runway system without any material causative impact on delay.

3.26 We noted that this aligns with the advice of the Committee. We agreed with the Coordination Committee that Scenario C best aligns with the expected demand, with the exception of the 0700z hour in which Scenario B does.

3.27 As with the Summer 2023 declaration, we agreed that it is prudent to limit the initial North Runway capacity release to preclude potentially excessive bunching of the schedule, as the relevant operational stakeholders become accustomed to the North Runway now being operational from 0600z. We also noted that further additional capacity is not likely required to accommodate the air traffic.

3.28 We noted that Condition 5 gives rise to complex questions of planning law, EU law, and international law, and it is not for the IAA to make a determination, nor is it possible for it to attempt to predict a likely determination, on this matter, with any sufficient degree of certainty or foreknowledge. Pending any such determination, we do not know whether Condition 5 is a constraining factor on traffic at Dublin Airport for the relevant scheduling season, and to the extent that it is, we do not know what the precise nature of the constraint is, such that we could give effect to it in the capacity parameters.

3.29 On that basis, we proposed to continue to freeze the R60 parameters in the referenced night hours (2300-0700 local), such that the declared runway capacity would remain in line with the pre-existing single (southern) runway capacity, before the North Runway was completed. That is, slots in the relevant hours would continue to be allocated only to the extent that was possible before the North Runway itself was completed.

3.30 We noted that since our last capacity decision, on 28 July 2023, an Enforcement Notice was issued by Fingal County Council (FCC) to daa in respect of Condition 5. On 8 August, daa sought, and was granted, leave to apply for judicial review in respect of the Enforcement Notice on a range of grounds, including many of the issues raised by the respondents to the S23 capacity decision. The IAA is a Notice Party to the proceedings. daa also sought, and was granted, a stay on the operation of the Enforcement Notice pending the determination of those proceedings. Fingal County Council was granted liberty to apply to the court, on 48 hours notice to daa, to have the stay lifted or varied.

3.31 In light of the Enforcement Notice, we noted that the airline members of the Coordination Committee supported the T-coding of any new slots/re-times within the hours 2200z to 0600z, with Dublin Airport and Air Nav Ireland abstaining. We have previously considered that approach and said that we do not believe it is appropriate for S24. We proposed to continue taking the approach that we have taken in the last number of seasons, in essentially freezing the approach to night capacity as described above.

3.32 We said that, in order to reflect it in a capacity declaration, we would first need

a decision on what precisely the condition lawfully requires and when precisely it requires it. Any other approach risks pre-emptively giving particular weight to a constraint by taking a view of its meaning and effect in particular circumstances, where that might differ from that ultimately deemed to be represented by the condition, or giving particular weight to a constraint which might be deemed unenforceable or to not fall to be enforced in S24.

3.33 Thus, we proposed to continue the approach taken in the above decisions.

Comments received in response to the Draft Decision

3.34 Consistent with the views it expressed in response to the Winter and Summer 2023 declarations, Aer Lingus argues that the real benefits of the North Runway will only be realised once the supporting infrastructure and resources are in place. It is therefore surprised that the IAA proposes an enhanced capacity declaration, particularly in the morning departure wave. It notes that it will only support capacity increases when there is evidence that the resources are in place.

3.35 Aer Lingus notes AirNav Ireland's abstention from voting and argues that AirNav Ireland's presentation to the Coordination Committee illustrated that on only 6 occasions over the 2-month sample period (27 June to 24 August 2023), did departures exceeded 35/hour in the peak 0600z hour with a maximum of 38/hour achieved on one signal day. Its states that AirNav commented that it was fortunate to achieve this level and that achieving that output is far from the norm. It questions why the IAA did not take this into account when making its Draft Decision.

3.36 Aer Lingus further argues that declaring capacity at this level will increase delays for all departing flights. It also expresses concerns with the accuracy of the modelling underpinning the proposed capacity declarations, stating that for summer 2023 Egis incorrectly projected the peak departure taxi times in the 0600z hour. It notes that the Summer 2024 morning peak is now projected at almost 23 minutes, an increase of almost 30% since Summer 2022 despite the new runway's introduction. It argues that this demonstrates that the supporting infrastructure is not yet in place to support this level of morning movement growth. It asks that the IAA re-evaluate its declaration for Summer 2024 considering the above information.

3.37 Aer Lingus notes the IAA's comments regarding Condition 5 and expresses general agreement with the IAA continuing the approach adopted in previous decisions. However, it does not accept that any application of Condition 5 could result in Aer Lingus being unable to operate certain allocated slots.

3.38 Dublin Airport notes that the Draft Decision addresses the potential impact of Condition 5 on the declaration of capacity at the Airport. It also notes that since the Draft Decision was issued, FCC has filed and served its opposition papers with regards to daa Judicial Review of its Enforcement Notice and that it has exhibited the Planning Report dated 18th July 2023 which underpins its decision to issue the Enforcement Notice. The Airport remains of the view that it has a good basis to challenge the Enforcement Notice. However, pending the

resolution of the proceedings, it requests that the IAA take account of this report before making its Final Decision. It again states that the Summer 2024 coordination parameters should be consistent with an *'appropriate interpretation*' of the terms of the North Runway Planning Permission and Condition 5.

3.39 The IAA has received over 80 further responses from individuals who, we understand, are generally residents living in the vicinity the airport, on the Draft Decision. These responses are generally consistent with those provided to us ahead of previous seasons, primarily related to the following topics: Condition 5 of the North Runway Planning Permission, Condition 3 of the Terminal 2 Planning Permission, and the health impacts of aviation noise and emissions on local residents. These views are summarised below.

3.40 The residents suggest that the IAA has failed to take account of the constraints represented by Condition 3(d) and Condition 5. It is argued that these are Operating Restrictions within the meaning of Regulation 598/2014 and that planning permission is required to amend them, which has not been granted.

3.41 Liam O'Grádaigh states that under SI No. 645 of 2003, daa is responsible for notifying interested parties and the IAA of operating restrictions and that the IAA is responsible for notifying the Minister, EU Commission and Member States. He asks whether the IAA has been notified by daa in line with Section 11 of that SI, and then whether the IAA has, in turn, yet notified the European Commission and the other EU Member States.

3.42 It is noted by residents that complaints have been made to FCC alleging breaches of Planning Permission relating to both Condition 5 as well as to other conditions such as relating to insulation schemes. Respondents have also pointed out that the Enforcement Notice against Dublin Airport may be successful and that this would, it is said, force Dublin Airport to restrict operations to 65 flights per night.

3.43 Regarding health concerns, several respondents have noted that their personal health and wellbeing has been negatively impacted by aircraft noise. Multiple respondents have also argued that the health and wellbeing of as many as 50,000 people are being impacted by aircraft noise. Respondents have referred the IAA to the HSE submission to the ANCA public consultation which notes the importance of Condition 3(d) and Condition 5 in protecting public health and the need to ensure that all significantly impacted people have an opportunity for mitigation. It is stated that the IAA does not have the expertise or legal remit to interpret these conditions.

3.44 Sheelagh Morris states that the conditions of the North Runway planning permission were set to give local residents protection from aircraft noise and harmful aircraft emissions and calls on the IAA to adhere to them. She refers to the HSEs submission on daa's planning application F20A/0668 which states that the Conditions were imperative for the health of the communities impacted. Sheelagh Morris has also requested an explanation of T-Coding which is referred to in the Draft Decision.

Final Decision

3.45 We have further considered the comments from Aer Lingus in respect of the capacity in the day hours. We note that the views of other airlines, and other Coordination Committee members, have already been accounted for within the majority advice from the Coordination Committee, which advice we proposed to follow.

3.46 We are not persuaded to change our Draft Decision in respect of the day hours. We do not see that there is evidence to suggest that declaring the parameters in line with the Coordination Committee advice is likely to materially increase taxi-out times, relative to declaring the parameters in line with Aer Lingus' views. We did take into account the comments of AirNav Ireland, Aer Lingus, and other parties. We note that it is not expected that the number of movements scheduled in the peak hour of departures off Runway 28R would necessarily or ordinarily depart within the same hour, i.e. a degree of departure queueing is expected in the peak departures hour. It is a matter for AirNav Ireland as to how it votes and what reasons it might or might not provide in relation to its vote, or provide any further response to our Draft Decision.

3.47 In respect of the accuracy of the modelling underpinning the S23 capacity declaration, we note that the 21 minute peak Aer Lingus appears to be referring to is the Summer 2024 schedule operating under the S23 limits. This is a 'control' scenario on slide 21, intended to show what is likely to happen in S24 if no changes are made to the limits. It is not the S23 flight schedule.

3.48 As presented by Dublin Airport at the Coordination Committee pre-meeting, the actual average first wave taxi-out time from April to July 2023 was 18 minutes, which was 1.5 minutes (9%) higher than 2022. This was linked to the North Runway not being operational for first wave until July 4th. The simulation modelling for S23 was based on dual runway operations from 0700 local time, and in that context the estimated first wave taxi-out time was 16.5 minutes.

3.49 We note the comments of Dublin Airport, Aer Lingus, and residents in respect of the potential capacity impact of Operating Restrictions deriving from the North Runway and/or T2 planning permissions. We note that Aer Lingus does not accept that Condition 5 could lead to it being unable to operate certain slots, whereas on the other hand residents believe that Condition 5 should be interpreted to imply a nightly limit of 65 movements.

3.50 As we set out in our S23 and W23 capacity decisions, and as recognised by some respondents, it is not for the IAA to determine the status of disputed, unclear and/or unnotified Operating Restrictions which apparently pose complex questions of planning, EU, and International law. Nor is for us to consider the merits or otherwise of such Operating Restrictions, such as in relation to health impacts or otherwise. Instead, it is for the IAA to follow such a determination which would provide clarity on these points, following Dublin Airport's legal challenge to the Enforcement Notice in respect of Condition 5 or otherwise. As a Notice Party, the IAA has reviewed the respective positions of FCC and Dublin Airport, as suggested by Dublin Airport. We understand Dublin Airport's response to the Draft Decision to be consistent with the position it has

taken to date, including within those proceedings.

3.51 In response to Liam O'Grádaigh, the IAA did not receive notification from daa pursuant to SI No. 645 of 2003, before that SI was repealed in 2019. Consequently, it did not carry out an assessment of these Operating Restrictions, nor notify them to the European Commission. Since 2019, notification requirements in relation to Operating Restrictions, including to the European Commission, are no longer a matter for the IAA as they are now governed by Regulation (EU) No 598/2014 and the Aircraft Noise (Dublin Airport) Regulation Act 2019.

3.52 We agree with the views put forward that it is important to consider plans for a scenario in which any additional Operating Restrictions are determined to be effective and should fall to be enforced in the scheduling season and in a manner which requires a reduction in operations. Such a scenario might lead to a requirement to amend the capacity declaration, and/or a result that air carriers may not be able to use certain allocated slots for the reason contemplated at Article 10.4(b) of the Slot Regulation, namely *'interruption of air services due to action intended to affect these services which makes it practically and/or technically impossible for the air carrier to carry out operations as planned'*.

3.53 Finally, in response to Sheelagh Morris, we note that T-Coding is where slots are allocated subject to a condition or conditions.

3.54 We have thus determined to continue the approach taken in recent capacity Decisions. We do so while again highlighting that it is important for stakeholders to be aware that it is possible that Condition 5 might be determined to be enforceable and to fall to be enforced in the S24 scheduling season, and in a manner which requires a reduction in operations in S24.

3.55 Thus, consistent with each capacity declaration since S22, no changes are made to the R60 limits in the night hours which were in place prior to completion of the North Runway. This again means that no dual runway capacity has been added between 2300 and 0700 local, meaning that the North Runway cannot lead to more flights in this period than were previously possible under the single Runway 28 based declaration.

3.56 Consequently, our Final Decision on the S24 runway parameters remains in line with our Draft Decision and in line with the advice of the Coordination Committee.

Parking Stands

3.57 In the Draft Decision, we proposed to retain the hard constraint on stands, while updating the stand count to take account of any changes to stand availability in the various apron areas. Dublin Airport proposed maintaining the current parameter while updating the count, as usual, to reflect seasonal changes. There was no objection or alternative proposal made within the Coordination Committee.

3.58 No respondent made any representation in respect of the stand parameter. We confirm our proposal from the Draft Decision.

4. Terminal Building Coordination Parameters

4.1 As proposed in the Draft Decision, we have decided to roll forward the S23 rolling hourly Passenger Terminal Buildings (PTB) limits, which are set out in Table 4.1, to the S24 season.

4.2 We also maintain the load factor assumptions of 95% for scheduled services in Terminal 1, 85% in Terminal 2, and 100% for charter services. We maintain the referral parameters in relation to Terminal 2 check-in desks and US Preclearance as per the S23 capacity.

Table 4.1: Final hourly Terminal Limits – S24

	Departures	Arrivals
Terminal 1	4,130	3,960
Terminal 2	3,600	3,400

Source: IAA

Proposed Hourly Limits – Dublin Airport

4.3 Dublin Airport proposed to roll forward the PTB hourly limits. It was noted that the PTB limits are unlikely to be a constraining factor on the allocation of slots in S24.

4.4 There were no objections to this proposal.

Proposed Referral Limits – Dublin Airport

4.5 Dublin Airport proposed retaining the referral parameter for Terminal 2 check-in desks 1-28 (Terminal 2 operators excluding Aer Lingus) – where demand exceeds 28 desks. It also recommended retaining the referral for US Preclearance, which applies to any new flights, or time changes to pre-existing flights, intending to use this facility.

4.6 There were no objections or alternative proposals in relation to these limits.

Final Decision on Terminal Capacity Parameters

4.7 We note the proposal to retain the capacity parameters unchanged, to which there was no objection (Aer Lingus notes its supports for maintaining the current limits). We do not see any reason to amend these parameters and have decided to roll them forward to S24 unchanged.

5. Appendix: Summer 2024 Coordination Parameters

The Irish Aviation Authority has determined the following scheduling limits for the Summer 2024 season at Dublin Airport.

Runway Scheduling Parameters:

Runway Hourly Limits			
Time UTC	Arrivals Limit	Departures Limit	Total Limit
0000	23	25	32
0100	23	25	32
0200	23	25	32
0300	23	25	32
0400	23	25	32
0500	23	36	40
0600	20	40	52
0700	25	25	45
0800	27	25	48
0900	27	26	52
1000	29	27	52
1100	30	30	52
1200	24	29	50
1300	28	26	52
1400	23	29	49
1500	26	27	47
1600	27	29	52
1700	26	28	51
1800	23	26	43
1900	25	22	41
2000	27	22	40
2100	33	25	44
2200	28	25	32
2300	23	25	32
Totals	**609**	**647**	**1034**

Maximum number of movements per 10 minute period- Dual runway operations	
Maximum Total	13
Maximum Arrivals	6
Maximum Departures	7

Maximum number of movements per 10 minute period- Single runway operations (2200z-0559z)	
Maximum Total	9
Maximum Arrivals	6
Maximum Departures	6*
*Exception: Maximum Departure Limit is 7 movements at 0500, 0510, 0520, 0530, 0540, 0550 UTC	

Passenger Terminal Parameters:

	Departures Hourly Limit	Arrivals Hourly Limit
Terminal 1	4,130	3,960
Terminal 2	3,600	3,400

Notes:

1) The hourly limit for passengers is rolled every 10 minutes.
2) Load factors of 95% are applied to Scheduled services for Terminal 1.
3) Load factors of 85% are applied to Scheduled services for Terminal 2.
4) Load factors of 100% are applied for Chartered services for both Terminal 1 and Terminal 2.

Stand Parameters:

	GA	**Non-Turnaround**		**Turnaround Stands**									**All**
	W.A.N	W.A.S	Total	5G	MRO	P1	P2	P3	P4	S.A	Triangle	Total	Total
Contact						23	11	11	21	9		**75**	**75**
Remote	8	16	**24**	15	6	3					4	**28**	**52**
All	8	16	**24**	15	6	26	11	11	21	9	4	**103**	**127**

Note: The table represents NBE stand capacity.

Area	**Constraint**
Stands	Where demand for stands exceeds supply based on coordination allocation, flights to be referred to Dublin Airport for detailed assessment.

Referral Parameters:

Area	**Flag**
T2 Check-in Desks 1-28 (T2 Operators excluding EI)	Demand exceeds 28 desks
US Preclearance	New flights and schedule changes

Table A2: Coordination Committee Voting Summary

Member	Votes	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1900	2000	2100
Aer Lingus	294	S23	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A
AirNav Ireland	20	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs
British Airways	21	S23	S23	S23	S23	S23	S23	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	S23
British Airways CF	17	S23	S23	S23	S23	S23	S23	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	S23
Dublin Airport	40	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs
DHL	0	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs
Emerald	66	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A	Sc A
KLM	18	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C
Ryanair	494	Sc C	Sc B	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C
Swiss	9	S23	S23	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	Sc C	S23	S23	S23
TUI	6	Sc B	Sc B	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	Abs	S23	S23	S23
UPS	10	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B	Sc B
Result		**Sc C**	**Sc B**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**	**Sc C**
% of total votes		**51%**	**51%**	**52%**	**52%**	**52%**	**52%**	**52%**	**52%**	**52%**	**52%**	**52%**	**52%**	**51%**	**51%**	**51%**

Case No	Description:	Location:	Registration Date	Decision Date	Final Grant Date	Applicant
F23A/0636	in the townlands of Pickardstown, Coultry, Huntsown, Forrest Green, Forrest	Dublin Airport, Swords, Co. Dublin	20/10/23			DAA plc
F23A/0104	daa plc intend to seek planning permission for development	Terminal 1, Dublin Airport, Collinstown, Co.Dublin	15/03/23	28/04/23	09/06/23	daa plc
F23A/0039	The proposed development subject of modification will consist of : i. Proposed	Dublin Airport, Corballis, Co. Dublin	08/02/23	22/02/23		Daa plc
F22A/0460	Intend to seek planning permission for development on 4no. sites	Townlands of Collinstown, Coultry, and Hunstown Co. Dublin, and in the townland of Pickardstown, Co. Dublin, and in the townland of Portmellick	22/12/22	27/02/23		DAA PLC
F21A/0518	Planning permission for development which will consist of alterations to section	Departures routes to and from the Terminal 1 & Terminal 2 - Part of the central section of the Express Red Long-Term Car Park, Towlands of Corballis / Collinstown & Toberbunny, Dublin Airport, Dublin	04/02/22	03/03/22	16/03/23	DAA PLC
F21A/0673	Development at site of c.5,889 square metres at Dublin Airport	In the Townland of Forrest Great at Dublin Airport, Co. Dublin	10/12/21	10/02/22	24/03/22	DAA PLC
F21A/0594	Permission for the continuation of use of the existing site office structure	The Green, Dublin Airport Central, Dublin Airport, Swords, Co Dublin, K67 X4X5	02/11/21	04/01/22	08/02/22	daa plc
F20A/0550	For full planning permission to extend the North Apron in the Airfield at Dublin	Airfield in the townlands of, Cloghran, Corballis, Forrest Great, Forrest Little, Collinstown & Rock, Dublin Airport, Co Dublin	14/10/21	08/12/21	13/07/22	DAA PLC
F20A/0668	A proposed development comprising the taking of a ‘relevant action’ only within	Dublin Airport, Co. Dublin.	21/09/21	08/08/22		daa plc
F20A/0455	Permission for alterations to sections of the existing internal road network and	Terminal 1 & Terminal 2 Forecourts, Townlands of Corballis and Collinstown, Dublin Airport, Co Dublin	19/01/21	15/02/21		DAA plc
DAC/122/20	Proposed construction of a new baggage handling/ancillary building	Terminal 1 Baggage Hall, Terminal 1, Dublin Airport, Collinstown, Co. Dublin.	17/11/20	11/12/20		Dublin Airport Authority

F20A/0431	Permission for alterations to sections of the existing internal road network and	Terminal 1 & Terminal 2 Forecourts, Townlands of Corballis and Collinstown, Dublin Airport, Co Dublin	04/09/20	10/09/20		DAA PLC
F20A/0394	1) A glass and stainless-steel bus shelter, 2.50m high x 1.38m deep x 5.84m long	East of Terminal 1, Dublin Airport, Collinstown, Co. Dublin.	12/08/20	30/09/20	06/11/20	DAA plc
20/4115	The proposed works comprise of material alterations to the existing Pier 3	Dublin Airport Authority, Head Office, Cloghran House, Dublin Airport, Co. Dublin	06/07/20	26/11/20		Dublin Airport Authority
20/4104	It is proposed to remove the manual call point units in all areas	Dublin Airport, Terminal 1, Dublin Airport, Swords, Co. Dublin	08/06/20	10/09/20		Dublin Airport Authority
20/4080/7D	Proposed construction of a new baggage handling/ancillary building (to be known	Area C, Terminal 1, Dublin Airport, Fingal, Co. Dublin	21/05/20	14/05/21		AMD Dublin Airport Authority
20/4048	Proposed material alterations of an existing Bussing Lounge at	Pier 1, Terminal 1, Dublin Airport, Collinstown, Co. Dublin	09/03/20	10/09/20		Dublin Airport Authority
19/4274	FSC application for a proposed construction of an animal welfare building	Dublin Airport, Swords Road, Collinstown Cross, Co. Dublin	30/12/19	12/06/20		Dublin Airport Authority
19/4275	FSC application for a proposed construction of a single storey substation in	Dublin Airport, Swords Road, Collinstown Cross, Co. Dublin	30/12/19	03/03/20		Dublin Airport Authority
19/4200/Rev	Proposed material alteration of an existing store room at the roof top level of	Pier 2, Terminal 1, Dublin Airport, Collinstown, Co. Dublin	05/09/19	28/11/19		Dublin Airport Authority
FS5/036/19	Three questions in relation to the use by passengers of the airport in excess of	Dublin Airport, Co. Dublin	03/09/19	17/09/19		daa
F19A/0023	Amend the North Parallel Runway (North Runway)(permitted under FCC Reg. Ref	North Runway, Dublin Airport, Co. Dublin.	19/07/19	09/08/19	18/03/20	DAA
F19A/0302	Minor alterations and retention of as built elements of the under construction D	Former western ancillary car park associated with the former Aer Lingus Head Office Building (HOB) & the former Annex building, Now known as Dublin Airport Central, Dublin Airport, Corballis, Swords, Co. Dublin.	11/07/19	03/09/19	09/10/19	DAA plc

DAC/082/19	New 6 level multi storey car park building, 5 storeys + roof level, building A3	Building A3, Dublin Airport Central, Dublin Airport, Co. Dublin	06/06/19	19/08/19		DAA PLC
FS5/018/19	Construction of a Security Gatepost (Security Gatepost 9A) and the demolition of	In the townland of Huntstown, Dublin Airport, Co. Dublin	31/05/19	26/06/19		DAA
F19A/0049	Development at a site at the Immigration Hall serving Pier 1 and Pier 2 and adjo	Terminal 1, Dublin Airport, Collinstown, Co. Dublin	16/05/19	07/06/19	16/07/19	DAA plc
DAC/065/19	Proposed Material Alteration and Extension to the T1 Immigration Hall and Associ	T1 Immigration Hall, Link Building & Pier 1 Sky Bridge	08/05/19	06/09/19		DAA PLC
DAC/050/19/Rev	Proposed 3rd floor subdivision into two office spaces of the previously approved	3rd Floor, Building A1, Dublin Airport Central, Dublin Airport, Co. Dublin	12/04/19	29/04/19		DAA PLC
DAC/047/19	New 7 storey office building. Building A2 of Dublin Airport Central, Cluster A,	Building A2, Dublin Airport Central, Dublin Airport, Co. Dublin	11/04/19	03/05/19		DAA PLC
DAC/048/19	New 7 storey office building. Building A5 of Dublin Airport Central, Cluster A,	Building A5, Dublin Airport Central, Dublin Airport, Co. Dublin	11/04/19	03/05/19		DAA PLC
19/4075/Rev	Proposed material alterations & extension to the previously approved FSC	T1 Immigration Hall, Link Building & Pier 1 Sky Bridge	03/04/19	08/07/19		Dublin Airport Authority
19/4056/Rev	Proposed 3rd floor subdivision into two office spaces of the previously	Building A1, 3rd Floor Dublin Airport Central, Dublin Airport, Co. Dublin	13/03/19	06/06/19		DAA PLC
19/4050	The proposed building is a single storey bin storage building to be constructed	Building S3, Dublin Airport Central, Dublin Airport, Co. Dublin	06/03/19	26/03/19		Brian Duffy (DAA PLC)
19/4051	The proposed building is a single storey bike storage building to be constructed	Building S4, Dublin Airport Central, Dublin Airport, Co. Dublin	06/03/19	14/05/19		Brian Duffy (DAA PLC)
19/4047	The proposed building is a single storey cafe to be constructed adjacent to	Building A7, Dublin Airport Central, Dublin Airport, Co. Dublin	04/03/19	24/07/19		Brian Duffy (DAA PLC)
19/4042	The proposed building is a multi storey car park building (5 levels plus roof	Building A3/A4, Dublin Airport Central, Dublin Airport, Co. Dublin	27/02/19	23/09/19		Brian Duffy (DAA PLC)
19/4043	The proposed building is a 7 storey office building to be constructed adjacent	Building A5, Dublin Airport Central, Dublin Airport, Co. Dublin	27/02/19	31/07/19		Brian Duffy (DAA PLC)
19/4038	The proposed building is a 7 storey office building to be constructed within the	Building A2, Dublin Airport Central, Dublin Airport, Co. Dublin	22/02/19	09/07/19		Brian Duffy (DAA PLC)

CLASS32/001/19	Notification in respect of proposed development in North Apron, Dublin Airport.	Dublin Airport, Co. Dublin.	12/02/19			DAA
DAC/012/19	Proposed material alterations to create staff accommodation.	Bridge Link,, Terminal 1 To Former Pier C, Dublin Airport, Fingal, Co. Dublin	05/02/19	26/02/19		Dublin Airport Authority
18/4252	Material alterations to Pier 2 as part of the Pier 2 Underpass Project at Dublin	Pier 2, Dublin Airport, Fingal, Co. Dublin	19/12/18	21/05/19		David Devlin (DAA)
DAC/171/18	Material alterations to pier 2 at part of the pier 2 underpass project at Dublin	Pier 2, Dublin Airport, Fingal, Co. Dublin	19/12/18	15/02/19		Dublin Airport Authority (DAA)
DAC/126/18	Installation of modular cabin consisting of an office and locker rooms.	Eastlands (Red) Longterm Carpark, Dublin Airport, Cloghran, Co. Dublin	11/10/18	23/11/18		Dublin Airport Authority
18/4141	The proposed works include alterations to Unit R3001, R3017 & R3054	Terminal 2, Dublin Airport, Co. Dublin	20/07/18	17/12/18		John Blake, DAA
18/4091/REV/7D	It is proposed to carry out material alterations to Pier 4 Transfers Extension a	Pier 4, Termial 2, Dublin Airport, Dublin, Fingal	11/05/18	05/07/18		Dublin Airport Authority
SID/01/18	Permanent continuance of use of the existing 8,840 space long-term car park kno	Blue Car Park, South Parallel Road, Harristown, Sillogue and, Ballymun Townlands, Dublin Airport and, Express Red at Stockhole, Cloghran, Toberbunny Townlands, Dublin Airport, Co. Dublin	18/04/18	08/10/18		daa plc
DAC/036/18	A 3 Storey extension & internal alterations to Pier 4, dublin Airport to house a	Pier 4, Terminal 2, Dublin Airport, Co. Dublin	22/03/18	25/04/18		Dublin Airport Authority (DAA)
DAC/188/17	Construction of a one room steel dispatch cabin	Communications Hut, Stand 140L, Dublin Airport, Cloghran, Co. Dublin	07/12/17	18/01/18		Dublin Airport Authority
DAC/181/17	Construction of a one room steel dispatch cabin.	FedEx Communications Hut, West Apron, Dublin Airport, Cloghran, Co. Dublin	28/11/17	17/01/18		Dublin Airport Authority
DAC/182/17	Construction of a one room steel dispatch cabin	Ethiopian Airlines, Communications Hut, West Apron, Dublin Airport, Cloghran, Co. Dublin	28/11/17	17/01/18		Dublin Airport Authority
DAC/171/17	To construct a new communications room which will house IT equipment & make alte	Pier 2, Terminal 1, Dublin Airport, Co. Dublin	14/11/17	15/12/17		Dublin Airport Authority (DAA AMD)

AC/133/17	Proposed alteration in the existing ASU area including the fit-out of the fallow	ASU Area, Mezzanine Level, Terminal 1, Dublin Airport, Collinstown, Co. Dublin.	19/09/17	10/11/17		Dublin Airport Authority
17/4185/7D	Proposed Alterations in the existing ASU area including the fit-out of the	ASU Area, Mezzanine Level, Terminal 1, Dublin Airport, Collinstown, Co. Dublin.	19/09/17	29/11/17		Dublin Airport Authority
DAC/097/17	The development will consist of the erection of a single storey Pre-Boarding Zo	South Apron, Pre Boarding Zone Building, Dublin Airport, Co. Dublin	19/07/17	07/09/17		AMD Dublin Airport Authority
DAC/041/17	Airport Assembly - Pier 3 (Previously known as Pier B). Material Alteration to A	Pier 3 (Previously known as Pier B), Dublin Airport, Co. Dublin.	28/03/17	12/05/17		Dublin Airport Authority
17/4052/7D	Material Alterations to Pier 3 - Area C (Gates 302 & 303), at Apron Level	Pier 3 (Previously known as Pier B), Dublin Airport, Co. Dublin.	24/03/17	12/06/17		David Devlin, DAA
FS5/014/17	Temporary site office	Land adjoining permitted Dublin Airport central development, adjacent to the former Aer Lingus Head office building, Corballis Drive, Dublin Airport	23/03/17	11/04/17		Dublin Airport Authority
DAC/038/17	Temporary material alteration within Pier 2 of Dublin Airport, this results in a	Pier 2, Terminal 1, Dublin Airport, Co. Dublin	22/03/17	05/05/17		DAA
17/4046	Temporary material alteration within Pier 2 of Dublin Airport. Alteration will	Dublin Airport, Collinstown, Co. Dublin.	13/03/17	05/05/17		Dublin Airport Authority
17/4037	Pier 4 is an existing airport pier which forms part of Terminal 2 in Dublin	Pier 4 Screens, Terminal 2, Dublin Airport, Co. Dublin.	24/02/17	03/04/17		Stephen Byrne, DAA
DAC/014/17	Proposed construction of a 6 storey office building, Building A1 of the Project	Building A1, Dublin Airport Central, Dublin Airport, Co. Dublin.	03/02/17	23/03/17		DAA PLC
DAC/015/17	Proposed construction of a 6 storey office building, Building A6 of the Project	Building A6, Dublin Airport Central, Dublin Airport, Co. Dublin.	03/02/17	23/03/17		DAA PLC
DAC/016/17	Proposed construction of a corridor link serving the existing car park and proje	Building A9, Dublin Airport Central, Dublin Airport, Co. Dublin.	03/02/17	23/03/17		DAA PLC
FS5/007/17	Erection of a roadside memorial	On realigned Naul Road (R108)	26/01/17	20/02/17		Dublin Airport Authority
F04A/1755/E1	To construct on airport lands, a runway, 3110m in length and 75m in width. The	Dublin Airport, Co. Dublin	11/01/17	07/03/17		Dublin Airport Authority Plc,Head Office

16/4242	Proposed Construction of a 6 Storey Office Building, Building A1 of the Project	Building A1, Dublin Airport Central, Dublin Airport, Co. Dublin.	22/12/16	31/05/17		Dublin Airport Authority
16/4244	Proposed Construction of a 6 Storey Office Building, Building A6 of the Project	Building A6, Dublin Airport Central, Dublin Airport, Co. Dublin.	22/12/16	06/06/17		Dublin Airport Authority
16/4245	Proposed construction of an Ancillary Building, Building A10a of the development	Building A10a, Project Central, Cluster A, Dublin Airport.	22/12/16	06/06/17		Dublin Airport Authority
16/4246	Proposed construction of an Ancillary building, Building A10b of the development	A10b, Project Central, Cluster A, Dublin Airport, Co. Dublin.	22/12/16	06/06/17		Dublin Airport Authority
FS5/048/16	Whether the decommissioning of petrol tanks	Former Texaco Garage, R132 Swords Road, Cloghran, Swords, County Dublin	20/12/16	25/01/17		Dublin Airport Authority
DAC/166/16	Provision of Glazed Screens Across the Pier at Level 15(400C) to seperate Passen	AMD Deptarment, Dublin Airport Authority, 2nd. Floor, Cloghran House, Dublin Airport, Dublin, Co. dublin	12/12/16	24/01/17		Dublin Airport Authority
16/4221	Construction of a c 2200 sq m pre-boarding building to the South Apron of	South Apron,, Dublin Airport,, Co. Dublin.	29/11/16	26/01/17		DAA plc
FS5/037/16	The installation of a temporary asphalt batching plant	Harristown Long Term Blue Car Park, R108, South Parallel Road, Sillogue, Dublin Airport	20/09/16	13/10/16		Dublin Airport Authority
CLASS32/002/16	Pedestrian security screening at Dublin Airport Fire Station	Dublin Airport	05/08/16	30/08/16		DAA
CLASS32/001/16	Temp security building	Dublin Airport	12/07/16			DAA
FS5/016/16	Insertion of an additional area of glazing on the east elevation of Terminal 2	Terminal 2, Dublin Airport, Co. Dublin.	25/05/16	15/06/16		Dublin Airport Authority
DAC/049/16/Rev	The previously proposed ground floor sanitary facilities as per the previously a	DAA HOB, Dublin Airport, Co Dublin	13/04/16	03/05/16		Dublin Airport Authority
DAC/002/16	Existing 7 storey office development.	TASC Building,, Dublin Airport	07/01/16	07/03/16		Dublin Airport Authority
15/4239	Proposed Material Alterations of the existing ground floor plant room	TASC, Dublin Airport, Co. Dublin.	22/12/15	16/02/16		Dublin Airport Authority

15/4221	Reconfiguration and fit-out of the existing Mezzanine Restaurant area and	Terminal 1, Dublin Airport, Co. Dublin.	04/12/15	31/05/16		Dublin Airport Authority
DAC/162/15	Reconfiguration and fit-out of the existing Mezzanine Restaurant area	Terminal 1, Dublin Airport, Co. Dublin.	04/12/15	23/08/16		Dublin Airport Authority
DAC/149/15	The proposed works comprise of Material Alterations to the existing Pier 3 at	Pier 3, Dublin Airport, Co. Dublin.	03/11/15	14/12/15		Dublin Airport Authority
15/4203/7D	The proposed works comprise of Material Alterations to the existing Pier 3 at	Pier 3, Dublin Airport, Co. Dublin.	28/10/15	15/02/16		Dublin Airport Authority
DAC/142/15	Reconfiguration and fit-out of the existing evacuation area N (back of house are	Exacuation Area N, Pier 4 (Prev known as Pier E), Terminal 2, Dublin Airport, Co Dublin	20/10/15	14/12/15		Dublin Airport Authority Group
FS5/041/15	The provision of Terminal support facilities at Second Floor Mezzanine Level wit	Terminal 2 - Second Floor Mezzanine Level, Dublin Airport, Co. Dublin	16/10/15	05/11/15		Dublin Airport Authority
FS5/028/15	Airbridge equipment at Dublin Airport	Pier 4, Terminal 2, Dublin Airport, Co. Dublin	31/07/15	25/08/15		Dublin Airport Authority
FS5/029/15	Alteration to southern facade of Pier 2 for provision of new glass doors	Dublin Airport Authority, Head Office, Cloghran House, Dublin Airport, Co. Dublin	31/07/15	25/08/15		Dublin Airport Authority
FS5/026/15	Modifications to Existing Facade at Terminal 1 Arrivals Hall to include replacem	Terminal 1 - Arrivals, Dublin Airport, Co. Dublin	13/07/15	27/07/15		Dublin Airport Authority
FS5/025/15	Extension of the existing concrete apron adjacent to the Ven Air Hanger	Dublin Airport, Co. Dublin	07/07/15	27/07/15		Dublin Airport Authority
15/4128	Proposed material alterations of the previously approved Fire Safety Certificate	HOB Office, Dublin Airport.	01/07/15	18/11/15		Dublin Airport Authority
DAC/024/15	Disabled Access Certificate for the Construction of a Temporary Extension	Pier 1 (Previously known as Pier D), Dublin Airport, Co. Dublin.	16/03/15	08/04/15		DAA/ P. Molloy & E. Kelly
15/4029/7D	Fire Safety Certificate Application for the Construction of a Temporary	Pier 1 (Previously known as Pier D), Dublin Airport, Co. Dublin.	02/03/15	22/04/15		P. Molloy & E. Kelly, DAA
15/4014/7D	Provision of a new single storey security cabin extension (11 sq m) to the rear	Gate Post 1A, off Castlemoate Road, Dublin Airport.	09/02/15	26/02/15		DAA
DAC/013/15	Provision of a new single storey security cabin (11 sqm) that consists of a secu	Gate Post 1A, off Castlemoate Road, Dublin Airport.	09/02/15	11/02/15		Dublin Airport Authority

14DR/018	Provision of single storey Security Gate Post 22 (Portacabin type building) to i	Security Post (Gate 22), Along perimeter boundary fence, at Junction of Swords Rd R132 and, Collinstown Lane (Old Airport Rd), Collinstown Cross, Dublin 9	22/12/14	06/01/15		Dublin Airport Authority
14/4162	Provision of single storey security gatepost (portacabin type building) to	Junction Swords Road (R132) & Collinstown Lane (Old Airport Road), Collinstown Cross, Co. Dublin.	08/12/14	26/01/15		Dublin Airport Authority
DAC/115/14	The proposed construction of a new Gate Post & security building	Security Post 4, Access Road, Dublin Airport.	24/11/14	08/12/14		Dublin Airport Authority
DAC/102/14	The existing six storey building is being reduced in size and subdivided into 2	DAA HOB Office Building, Dublin Airport, Co. Dublin.	30/10/14	04/12/14		Dublin Airport Authority
14/4135	The existing six storey building is to be reduced in size and sub-divided into 2	DAA HOB Office Building, Dublin Airport, Co. Dublin.	29/10/14	19/02/15		Dublin Airport Authority
F14A/0436	Refurbishment works to the existing 6-storey office building (c.10,836 sq.m gfa)	The Former Aer Lingus Head Office Building (HOB), Corballis Drive, Dublin Airport, Co. Dublin.	24/10/14	17/12/14	28/01/15	Dublin Airport Authority Plc (daa)
F14A/0260	The temporary change of use for a maximum period of 5 no. years of the existing	Western Ancillary Car Park associated with the former Aer Lingus Head Office Building, Corballis Drive, Dublin Airport, Corballis, Co. Dublin.	26/06/14	14/08/14	22/09/14	Dublin Airport Authority plc (daa)
DAC/037/14	Material alterations to the existing Airside Retail Street at Departures Level o	Terminal 1, Dublin Airport, Co. Dublin.	08/05/14	10/06/14		Dublin Airport Authority
F14A/0149	Erection of 1 no. backlit advertising sign to be affixed to the facade adjacent	Lobby 2, Terminal 1, Terminal 1 Arrivals Road, Dublin Airport, Co. Dublin.	14/04/14	30/05/14	07/07/14	Dublin Airport Authority plc (daa)
F13A/0352	Placement of a cafe-van type structure	Coach Park, Dublin Airport, Atrium Exit Road, Corballis, Co. Dublin.	06/03/14	01/04/14	06/05/14	Dublin Airport Authority
14/4035	Material alterations to the existing Airside Retail Street at Departures Level	Terminal 1, Dublin Airport, Co. Dublin.	06/03/14	09/09/14		Dublin Airport Authority
F14A/0004	Partial change of use of a portion of the ground floor only (284.6sq.m.) from	Old Central Terminal Building (O.C.T.B.), Dublin Airport, Collinstown, Co. Dublin.	06/01/14	27/02/14	07/04/14	Dublin Airport Authority plc (DAA)
F13A/0341	Placement of a caravan type structure. The total area of a van would be 11sq.m.	Coach Park, Dublin Airport, Atrium Exit Road, Corballis, Co. Dublin.	12/09/13	16/09/13		Dublin Airport Authority plc (DAA)

DAC/092/13	Extension and refurbishment of US CBP at ground floor. Additional floor area 486	US CBP, Customs and Border Protection, Ground Floor, Pier 4, Terminal 2, Dublin Airport	29/08/13	09/09/13		Dublin Airport Authority
13/4106	The development consists of the extension and refurbishment to US CBP	US CBP, Customs and Border Protection, Ground Floor, Pier 4, Terminal 2, Dublin Airport	29/08/13	07/01/14		Dublin Airport Authority
13/4057	The proposal is for a prefabricated unit totalling 57.7 sq.m. in area and	Gate Post 22A, off Collinstown Lane, Dublin Airport, Co. Dublin.	25/04/13	24/07/13		Dublin Airport Authority
DAC/053/13	Prefabricated unit totalling 57.7 sqm in area and comprises a security screening	Gate Post 22A, off Collinstown Lane, Dublin Airport, Co Dublin	25/04/13	08/05/13		Dublin Airport Authority
F13A/0094	Permission for demolition and clearance at what is known as	Iona Hangar, R108 Regional Road, Huntstown, Dublin Airport, Co. Dublin	20/03/13	08/05/13	11/06/13	Dublin Airport Authority plc (DAA)
F13A/0094	Permission for demolition and clearance at what is known as	Iona Hangar, R108 Regional Road, Huntstown, Dublin Airport, Co. Dublin	20/03/13	08/05/13	11/06/13	Dublin Airport Authority plc (DAA)
DAC/128/12	New Airside/Landside Security Screening Post	Gate Post 1A, off Castlemoate Road, Dublin Airport, Co Dublin	07/11/12	17/12/12		Dublin Airport Authority
12/4164	The building is 14.95 x 11.7m internally and comprises a security screening area	Gate Pose 1A, off Castlemoate Road, Dublin Airport, Co. Dublin.	07/11/12	19/12/12		Dublin Airport Authority
F12A/0216	The replacement of 2 no. existing back-lit advertising signs with 2 no. new back	Corballis Road North, Dublin Airport, Co Dublin	12/07/12	04/09/12	09/10/12	Dublin Airport Authority (DAA)
10/4089	It is proposed to carry out a major upgrade to the fire strategy for the	Terminal 1, Dublin Airport, Co. Dublin.	18/06/12	07/10/13		Dublin Airport Authority
12/4022	Material alteration of existing exit route and sanitary facilities to a defined	Level 10 Airside, Terminal 2, Dublin Airport	01/03/12	13/07/12		Dublin Airport Authority
12/4006/Rev	Modifications to the previously approved layouts including changes to escape	Terminal 2, Pier E And The Energy Centre, Dublin Airport, Fingal, Co. Dublin	23/01/12	13/07/12		Dublin Airport Authority
F11A/0378	Development comprising alterations to the external elevations of the existing st	Personnel & Catering Building (PCB), Corballis Park, Dublin Airport, Co. Dublin	25/10/11	13/12/11	24/01/12	Dublin Airport Authority plc (DAA)
F11A/0369	The erection of a jet-blast screen on the airfield apron between Piers A and D a	Dublin Airport, Co. Dublin	11/10/11	30/11/11	10/01/12	Dublin Airport Authority plc (DAA)

F11A/0333	The installation of 13 no. banner advertisement signs. The proposed banners are	Terminal 2 Forecourt And, Corballis Road South, Dublin Airport, Co Dublin	07/09/11	27/10/11	07/12/11	Dublin Airport Authority plc (DAA)
F11A/0238	Permission for an increase in on-site storage of Potassium Acetate (de-icing flu	The Airfield Maintenance Base, Colinstown Lane, Dublin Airport, Co Dublin	22/06/11	08/08/11	13/09/11	Dublin Airport Authority Plc (DAA)
SID/01/11	Long Term Car Park for 8840 spcaes	Harristown Long Term Blue Car Park, R108, South Parallel Road, Sillogue, Dublin Airport	03/03/11			Dublin Airport Authority
DAC/004/11	The building is 4m high and 12mx27m in plan. The building is fabricated from 9 m	Gate 32, Dublin Airport, Co Dublin	17/01/11	11/03/11		Dublin Airport Authority
11/4006	The building is 4m high and 12m x 27m in plan. The building is fabricated from 9	Gate 32, Dublin Airport, Co Dublin	17/01/11	11/04/11		Dublin Airport Authority
10/4193	Construction of a small single storey taxi kiosk facility for use by airport	Terminal 2 Check-In Building, Dublin Airport., (taxi Kiosk To Front).	27/10/10	18/11/10		Dublin Airport Authority
10/4134/REV	Reduction in the number of levels of carparking and omission of previously	DAA Multistorey Car Park, Dublin Airport, Co. Dublin.	26/08/10	24/11/10		Dublin Airport Authority
F10A/0289	The installation of 7 low level advertising signs and structures within the pass	Terminal 2, Dublin Airport, Townland Of Corballis, Barony Of Coolock, Co Dublin	20/07/10	09/09/10	21/10/10	Dublin Airport Authority
F10A/0110	Retention of the concrete hard area of 332.95sq.m. and planning permission also	Dublin Airport, Huntstown, In The Barony Of Nethercross, Co. Dublin	13/07/10	06/08/10	14/09/10	Dublin Airport Authority
10/4101	It is proposed to subdivide one unit into 5 smaller units. This Fire Safety Ce	Unit RT03, Units 1-5, Level 30, Terminal 2, Dublin Airport, Co. Dublin	29/06/10	12/10/10		Eanan O'Doherty Dublin Airport Authority
DAC/069/10	Life safety systems upgrade requiring minor material alterations to arrivals	Terminal 1, Dublin Airport, Collinstown, Co. Dublin	29/06/10	14/07/10		Dublin Airport Authority plc
10/4073	Revised fire safety certificate application to address design modifications and	Terminal 2, Dublin Airport.	25/05/10	03/08/10		Dublin Airport Authority
DAC/033/10	Airside passenger corridor between existing Pier B and Pier C of Dublin Airport	Dublin Airport, Townland Of Collinstown Barony Of Coolock, Co. Dublin.	22/03/10	06/05/10		Dublin Airport Authority
10/4032	Works comprise the provision of a new pedestrian link (Airside) between	Pier B Connectivity Unit, Dublin Airport, Co. Dublin.	18/03/10	19/07/10		DAA (Dublin Airport Authority)

F10A/0089	Retention of the concrete hard area of 332.95sq.m. and planning permission also	Dublin Airport, Huntstown, In The Barony Of Nethercross, Co. Dublin	12/03/10	16/03/10		Dublin Airport Authority
DAC/010/10	Terminal linked multi storey car park	Terminal 2, Multi Storey Car Park, Dublin Airport, Co Dublin	16/02/10	25/03/10		Dublin Airport Authority
F09A/0626	The development will consist of: an airside link corridor for transferring passe	Dublin Airport, Townland Of Collinstown, Barony Of Coolock, Co. Dublin	08/12/09	09/02/10	18/03/10	Dublin Airport Authority
F09A/0397	Alteration to the previously approved planning application Ref. F08A/1261 and wi	Main Terminal Building 1, Dublin Airport, Collinstown, Co Dublin	23/07/09	14/09/09	21/10/09	Dublin Airport Authority Plc
F09A/0362	The following advertising signage: 1) Replacement of two high level static signs	Dublin Airport, Collinstown & Barony Of Coolock, Co Dublin	08/07/09	31/08/09		Dublin Airport Authority
09/4112	A two-storey extension to the north-west gable of the existing fire station. The	Dublin Airport Fire Station, Huntstown, Co. Dublin.	02/07/09	20/11/09		Dublin Airport Authority
09/4088	Decommission and remove an escalator and stairs from use and infill the floor	Pier D - Hughes & Hughes Retail Unit, Pier D, Dublin Airport, Dublin	25/05/09	15/04/10		Dublin Airport Authority
F09A/0164	Two-storey extension to the north-western gable end of the existing Fire Station	Dublin Airport Fire Station, Huntstown, Co. Dublin	31/03/09	22/05/09	30/06/09	Dublin Airport Authority PLC
09/4052	The building has two previously approved Fire Safety Certificates (Refs:	Terminal 1, Dublin Airport, Co. Dublin.	30/03/09	14/04/09		Dublin Airport Authority
F09A/0159	Retention permission for alterations to already approved planning application (R	Stockhole, Cloghran, Co Dublin	27/03/09	18/05/09	24/06/09	Dublin Airport Authority
09/4048	Single storey extension to G.N.I.B. and vertical circulation improvements for	Link Building And Pier D, Dublin Airport, Collinstown, Co. Dublin.	24/03/09	11/05/09		Dublin Airport Authority
F09A/0092	A single storey extension (58 sq.m.) to existing west end Substation located adj	Dublin Airport, Harristown, Co Dublin	25/02/09	20/04/09	29/05/09	Dublin Airport Authority
F09A/0055	The development will consist of the retention of one generator and one oil stora	Southeast Of The Airport Roundabout, Adjacent To ESB Sublstation, Dublin Airport, Collinstown, Co. Dublin	05/02/09	31/03/09	08/05/09	Dublin Airport Authority
F09A/0010	Retention of the existing single storey temporary passenger aircraft pier facili	Dublin Airport Collinstown, Co. Dublin.	14/01/09	09/03/09	17/04/09	Dublin Airport Authority

F08A/1441	Retention and extension of duration of previously granted planning permission fo	Dublin Airport Collinstown, Co. Dublin.	23/12/08	05/01/09		Dublin Airport Authority
08/4419	Renovation and extension of VIP facilities.	Ground Floor Pier A & Ground Floor Collinstown House, Dublin Airport, Collinstown, Co. Dublin.	23/12/08	17/02/09		Dublin Airport Authority
08/4421	It is proposed to fit out Unit 501 at the new Terminal 1 extension at Dublin	Unit 501, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	11/03/09		Dublin Airport Authority
08/4422	It is proposed to fit out Unit 502 at the new Terminal 1 extension at Dublin	Unit 502, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	11/03/09		Dublin Airport Authority
08/4423	It is proposed to fit out Unit 504 at the new Terminal 1 extension at Dublin	Unit 504, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	11/03/09		Dublin Airport Authority
08/4424	it is proposed to fit out Unit 505 at the new Terminal 1 extension at Dublin	Unit 505, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	10/03/09		Dublin Airport Authority
08/4425	It is proposed to fit out Unit 506 at the new Terminal 1 extension at Dublin	Unit 506, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	19/03/09		Dublin Airport Authority
08/4426	It is proposed to fit out Unit 507 at the new Terminal 1 extension at Dublin	Unit 507, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	11/03/09		Dublin Airport Authority
08/4427	It is proposed to fit out Unit 508 at the new Terminal 1 extension at Dublin	Unit 508, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	02/04/09		Dublin Airport Authority
08/4428	It is proposed to fit out Unit 509 at the new Terminal 1 extension at Dublin	Unit 509, Terminal 1, Dublin Airport, Co. Dublin.	23/12/08	17/04/09		Dublin Airport Authority
08/4412	Relocation of direct retail unit from current location in Pier A/D Link Building	Temporary Retail Unit, Pier A/D Link Corridor, Departures Level, Main Terminal Building, Dublin Airport.	19/12/08	21/01/09		Dublin Airport Authority
F08A/1099	Construction of a new storm water attenuation tank within the townland of Cloghr	Townland Of Cloghran In The Eastlands Car Park Area, Dublin Airport, Co. Dublin	20/11/08	15/12/08	30/01/09	Dublin Airport Authority
08/4384	Material alterations to ground floor and first floor of Pier D at Dublin	Pier D, Dublin Airport, Co. Dublin.	18/11/08	28/01/09		DAA
08/4376	It is proposed to fill in a void in the floor adjacent to the restaurants at	Mezzanine Level, Main Terminal Building, Dublin Airport.	17/11/08	29/01/09		Dublin Airport Authority
08/4367	The extension to the Terminal 1 building at Dublin Airport has a previously	Terminal 1, Dublin Airport, Co. Dublin.	04/11/08	11/03/09		Dublin Airport Authority

F08A/1261	The development will consist of the installation of new large scale wayfinding s	Main Terminal Building 1, Terminal 2 And Entrance To Airport Campus Adjacent To M1 Roundabout, Dublin Airport, Collinstown, Co. Dublin	31/10/08	16/12/08	30/01/09	Dublin Airport Authority
08A/0782	Alterations to a previously approved planning application for a development know	Dublin Airport, In The Townland Of Collinstown, Barony Of Coolock, Co. Dublin	21/10/08	14/11/08	22/12/08	Dublin Airport Authority
08/4357	Material alterations from Information Desk to a Kiosk, Level 1, Pier D, Dublin	Kiosk Unit, Level 1, (Departures Level), Pier D, Dublin Airport.	17/10/08	15/12/08		Dublin Airport Authority
08/4346	Material alterations associated with fit-out of stores and office at Pier D	Pier D, Dublin Airport, Co. Dublin.	03/10/08	18/12/08		Dublin Airport Authority
F08A/1084	The development will consist of: the removal of backfilling of an existing under	Dublin Airport, In The Townland Of Collinstown, Barony Of Coolock, Co. Dublin	04/09/08	28/10/08	03/12/08	Dublin Airport Authority
F08A/1025	Alterations to the alignment of the campus roads and coach park location, previo	Dublin Airport, In The Townland Of Collinstown, Barony Of Coolock, Co. Dublin	19/08/08	10/10/08	20/11/08	Dublin Airport Authority
F08A/1017	A ground floor and first floor extension to the southwest end of the Pier D Link	Ground Floor And First Floor Pier D, Link Building, Dublin Airport, Collinstown, Co Dublin	15/08/08	07/10/08	13/11/08	Dublin Airport Authority plc
F08A/1018	A single storey flat roof extension of the existing Garda National Immigration B	Ground Floor, Link Building, Dublin Airport, Collinstown, Co Dublin	15/08/08	07/10/08	13/11/08	Dublin Airport Authority plc
F08A/0983	The development will consist of: A ground floor and first floor extension to the	Ground Floor And First Floor Pier D Link Building, Dublin Airport, Collinstown, Co. Dublin	08/08/08	12/08/08		Dublin Airport Authority Plc
F08A/0916	The development will consist of: A single storey flat roof extension of the exi	Ground Floor, Link Building, Dublin Airport, Collinstown, Co Dublin	22/07/08	29/07/08		Dublin Airport Authority Plc
08/4217	Material alterations associated with the conversion of existing car hire desk to	DAA Office, Arrivals Levels, Terminal 1, Dublin Airport	13/06/08	12/08/08		Dublin Airport Authority
8/4206	Material alterations associated with fit out of airline accommodation at Pier D	Airline Accommodation Fit Out, Pier D, Dublin Airport.	10/06/08	06/08/08		Dublin Airport Authority
08/4202	Water storage reservoir control building and pumping station.	Townland Of Cloghran Beside Castlemoate House Road, Dublin Airport, Proposed Airport Reservoir Control Building And Pumping Station.	06/06/08	22/08/08		Dublin Airport Authority

F08A/0667	Alterations to a previously approved planning application for a development know	Dublin Airport, In The Townland Of Collinstown, Barony Of Coolock, Co. Dublin	28/05/08	05/06/08		Dublin Airport Authority
08/4150	Internal fit-out of existing office building and separation from adjacent	Old DHL Office Building, Corballis Park, Dublin Airport.	16/04/08	04/07/08		Dublin Airport Authority
F08A/0426	The installation of a two-storey system building on the northwestern gable end o	Fire Station, Dublin Airport, Huntstown, Co Dublin	09/04/08	28/05/08	02/07/08	Dublin Airport Authority Plc
F08A/0405	The development will consist of: the renovation and expansion of the existing VI	Ground Floor Pier A & Ground Floor Collinstown House, Dublin Airport, Collinstown, Co. Dublin	02/04/08	21/05/08	25/06/08	Dublin Airport Authority
08/4093	Proposed car wash control kiosks.	"Block 2", Stockhole, Cloghran, Co. Dublin., (Airport Car Hire Facilities).	14/03/08	04/06/08		Dublin Airport Authority
08/4064	Existing area previously used as circulation space with travellators providing	Pier A-D Shop, Link Building, Main Terminal, Dublin Airport.	28/02/08	13/06/08		Dublin Airport Authority
F08A/0192	The installation of a two-storey system building on the northwestern gable end o	Fire Station, Dublin Airport, Huntstown, Co Dublin	20/02/08	26/02/08		Dublin Airport Authority Plc
08/4048	Existing retail unit proposed extension into adjacent concourse area.	Retail Unit, Multi Storey Car Park, Ground Floor Concourse, Dublin Airport.	19/02/08	12/05/08		Dublin Airport Authority
F08A/0021	Erection of signage to the Cityjet Hangar at Dublin Airport, consisting of four	Dublin Airport, Huntstown, Barony Of Nethercross, Co. Dublin.	14/01/08	03/03/08	09/04/08	Dublin Airport Authority
F08A/0023	Alterations to Pier E which was previously approved as part of the development k	Dublin Airport, In The Townland Of Collinstown, Barony Of Coolock, Co. Dublin	14/01/08	03/03/08	09/04/08	Dublin Airport Authority
08/4002	Development consists of : a two storey temporary office building subdivided into	Dublin Airport - South Apron, Terminal 2, South Of Cargo Buildings.	08/01/08	14/03/08		Dublin Airport Authority
F07A/1696	Erection of signage to the Cityjet Hangar at Dublin Airport, consisting of four	Dublin Airport, Huntstown, Barony Of Nethercross, Co. Dublin.	21/12/07	04/01/08		Dublin Airport Authority
F07A/1526	Alterations to a single storey over basement energy centre, previously approved	Pier C At Dublin Airport, In The Townland Of Collinstown, Barony Of Coolock, Co. Dublin	22/11/07	23/01/08	29/02/08	Dublin Airport Authority
F07A/1504	Alterations to a previously approved development, known as Terminal 2 (Register	Termindal 2, Dublin Airport, Townland Of Collinstown, Barony Of Coolock, Co Dublin	19/11/07	18/01/08	29/02/08	Dublin Airport Authority

07/4415	Proposed single storey boiler house at Aer Lingus Head Office, Dublin Airport	Aer Lingus Head Office, Dublin Airport, Co. Dublin.	24/10/07	11/01/08		Dublin Airport Authority
07/4416	Proposed single storey boiler house at TASC, Dublin Airport, Co. Dublin.	TASC, Dublin Airport, Co. Dublin.	24/10/07	11/01/08		Dublin Airport Authority
F07A/1332	Upgrade to existing boiler facility in the horseshoe area of Dublin Airport Camp	Dublin Airport	18/10/07	07/12/07	25/01/08	Dublin Airport Authority
F07A/1336	Construction of a new potable water storage reservoir within the townland of Clo	Townland Of Cloghran Beside Castlemoate House Road, Dublin Airport, Co. Dublin	18/10/07	11/12/07	25/01/08	Dublin Airport Authority
07/4405	Material alterations to ground floor level Area C, Pier D, Dublin Airport.	Pier D, Dublin Airport, Co. Dublin.	16/10/07	19/12/07		Dublin Airport Authority
F07A/1298	Upgrade to existing boiler facility in the horseshoe area of Dublin Airport Camp	Dublin Airport	12/10/07	19/10/07		Dublin Airport Authority
F07A/1164	Temporary planning permission for 5 years. The development will consist of: a t	South Of The Cargo Buildings, Dublin Airport, Townland Of Collinstown, Barony Of Coolock, Co Dublin	18/09/07	09/11/07	19/12/07	Dublin Airport Authority
F07A/0754	The erection of a Fire Simulation Rig, circa 1,200 metres squared, with associat	Dublin Airport Authority Fire Station, Townland Of Huntstown, Dublin Airport, Co Dublin	11/09/07	05/10/07	13/11/07	Dublin Airport Authority Plc
07/4357	The proposed extension to the airport comprises three levels and will be provide	Terminal 1, Dublin Airport, Co. Dublin.	10/09/07	04/07/08		Dublin Airport Authority
F07A/1117	The construction of an alternative exit onto Corballis Road South to serve exist	Cloghran House, Dublin Airport, Corballis, Co. Dublin	06/09/07	26/10/07	04/12/07	Dublin Airport Authority
07/4352	Extension and material alterations to a mixed use building.	Block 2, Stockhole, Cloghran, Co. Dublin.	04/09/07	12/10/07		Dublin Airport Authority
07/4353	Extension and material alterations to a mixed use building.	Block 3, Stockhole, Cloghran, Co. Dublin.	04/09/07	12/10/07		Dublin Airport Authority
F07A/1064	Temporary planning permission for 5 years for development to the south of the ca	Dublin Airport, In The Townland Of Collinstown, Barony Of Coolock, Co. Dublin	23/08/07	11/09/07		Dublin Airport Authority
F07A/1049	The construction of an alternative exit onto Corballis Road South to serve exist	Cloghran House, Dublin Airport, Corballis, Co. Dublin	17/08/07	22/08/07		Dublin Airport Authority

7A/0523	The development is primarily of a new substation consisting of a new medium volt	North East & South East Of The Cuckoo Stream, Adjacent R132 Dublin Airport, Co Dublin	07/08/07	28/08/07	04/10/07	Dublin Airport Authority
F07A/0916	The construction of an alternative exit onto Corballis Road South to serve exist	Cloghran House, Dublin Airport, Corballis, Co. Dublin	20/07/07	10/08/07		Dublin Airport Authority
F06A/0795	Temporary change of use to part of the second floor (Departures Floor) of Multi	Second Floor (Departures Level) Of Multi Storey Car Park, Block A Dublin Airport, Co. Dublin	11/07/07	03/08/07	13/09/07	Dublin Airport Authority
07/4209	Proposed HV sub station and ESB control room.	Dublin Airport, Co. Dublin.	13/06/07	17/08/07		Dublin Airport Authority
07/4210	Proposed HV sub station and ESB control room.	Dublin Airport, Co. Dublin.	13/06/07	17/08/07		Dublin Airport Authority
F07A/0473	Alterations to already approved planning application (Reg. Ref. F06A/1624). The	Stockhole, Cloghran, Co. Dublin	18/04/07	11/06/07	18/07/07	Dublin Airport Authority
F07A/0423	Erection and installation of 2 no. oil tanks	Dublin Airport, Huntstown, In The Barony Of Nethercross, Co. Dublin	05/04/07	29/05/07	11/07/07	Dublin Airport Authority
F07A/0093	Development of an extension to the existing adjoining ground level long term car	South Lands Car Park, Harristown, Dublin Airport, Co. Dublin	02/04/07	26/04/07	13/06/07	Dublin Airport Authority
07/4113	A. Demolition of existing DAA and Airline Offices. B. Construction of	Pier A And D Centralized Immigration Area, Ground Floor, Pier A Link Building, Dublin Airport.	28/03/07	21/09/07		Dublin Airport Authority
F06A/1843	To construct an extension to the existing main terminal building at Dublin Airpo	Dublin Airport, Townland Of Collinstown, Barony Of Coolock, Co Dublin	26/03/07	19/04/07		Dublin Airport Authority
07/4097	To construct a new airside substation at Dublin Airport.	Substation A, Dublin Airport, Townland Of Collinstown, Barony Of Coolock, Co. Dublin. (south/east of Main Runway & North Of Collinstown Lane).	21/03/07	15/05/07		Dublin Airport Authority plc
07/4088	The construction of a new aireside substation at Dublin Airport	ESB Substation B, Dublin Airport, Townland Of Collinstown, Barony Of Coolock, Dublin, (To East Of R108, 60 Metres, Southeast Of The Airport Fire, Station)	13/03/07	17/05/07		Dublin Airport Authority plc
F06A/1809	To construct a new airside substation B and an underground fuel tank. The airsi	Dublin Airport, Townland Of Collinstown, Co Dublin	12/03/07	03/04/07	17/05/07	Dublin Airport Authority Plc

07/4082	Temporary buildings assoicated with the provision of car hire facilities	Block 1, Type C, Stockhole, Cloghran, Co. Dublin.	09/03/07	27/04/07		Dublin Airport Authority
07/4083	Temporary buildings associated with the provision of car hire facilities.	Block 2, Type E, Stockhole, Cloghran, Co. Dublin	09/03/07	27/04/07		Dublin Airport Authority
07/4084	Temporary buildings assoicated with the provision of car hire facilities	Block 3, Type E, Stockhole, Cloghran, Co. Dublin	09/03/07	27/04/07		Dublin Airport Authority
07/4085	Temporary buildings associated with the provision of car hire facilities.	Block 4, Type E, Stockhole, Cloghran, Co. Dublin.	09/03/07	27/04/07		Dublin Airport Authority
F07A/0148	An extension to the existing Airfield Maintenance Store for the storage of paint	Airfield Maintenance Base (Airside), Collinstown Lane, Co Dublin	13/02/07	04/04/07	17/05/07	Dublin Airport Authority Plc
F06A/1624	The development will consist of the provision of 6 no. car rental facilities, co	Stockhole, Cloghran, Co. Dublin	08/02/07	12/03/07	26/04/07	Dublin Airport Authority
07/4040	Temporary buildings associated with the provision of car hire facilities.	Block 1, Units A, B, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4041	Temporary buildings associated with the provision of car hire facilites.	Block 1, Unit J, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4042	Temporary buildings associated with the provision of car hire facilities.	Block 1, Unit K, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4043	Temporary buildings associated with the provision of car hire facilites.	Block 2, Units A, B, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4044	Temporary buildings associated with the provision of car hire facilities.	Block 2, Unit D, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4045	Temporary buildings associated with the provision of car hire facilities.	Block 3, Units A, B, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4046	Temporary buildings associated with the provision of car hire facilities.	Block 3, Unit D, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4047	Temporary buildings associated with the provision of car hire facilities.	Block 4, Units A, B, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4048	Temporary buildings associated with the provision of car hire facilities.	Block 4, Unit D, Stockhole, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4049	Temporary buildings associated with the provision of car hire facilities.	Block 5, Units G & H, Cloghran, Co. Dublin.	02/02/07	27/04/07		Dublin Airport Authority
07/4012	1. Extension at Arrivals, Departures & Mezzanine Level. 2. A new apron access	Extension of Main Terminal Building to north west towards Pier A, Dublin Airport.	17/01/07	09/03/07		Dublin Airport Authority

F06A/1629	New ground level extension to provide new walkway to southwest (airside) facade	Pier A Link, Dublin Airport, Collinstown, Co. Dublin	12/01/07	06/02/07	08/03/07	Dublin Airport Authority
F06A/1908	The development will consist of the provision of temporary facilities for 4 no.	Stockhole, Cloghran, Co. Dublin	22/12/06	22/02/07	12/04/07	Dublin Airport Authority
F06A/1949	Construction consolidation compound and associated works on lands with an area	Dublin Airport, Barony Of Coolock, Co. Dublin.	22/12/06	22/02/07	12/04/07	Dublin Airport Authority
06/4565	Steel framed industrial buildings for car hire use comprising a single storey	Block 1, Units A & B, Stockhole, Cloghran, Co. Dublin.	21/12/06	19/02/07		Dublin Airport Authority
06/4566	Steel framed industrial buildings for car hire use comprising a single storey	Block 2, Units C & D, Stockhole, Cloghran, Co. Dublin.	21/12/06	19/02/07		Dublin Airport Authority
06/4567	Steel framed industrial building for car hire use comprising a single storey	Block 3, Units E & F, Stockhole, Cloghran, Co. Dublin.	21/12/06	19/02/07		Dublin Airport Authority
06/4568	Single storey blockwork substation and switch room building.	Adjacent To Block 1, Unit A, Stockhole, Cloghran, Co. Dublin.	21/12/06	29/01/07		Dublin Airport Authority
F06A/1867	The development will consist of the provision of temporary facilities for 4 no.	Stockhole, Cloghran, Co. Dublin	19/12/06	21/12/06		Dublin Airport Authority
06/4536	Material alterations to previously approved design to Pier D.	Pier D, Dublin Airport, Co. Dublin.	13/12/06	09/10/07		MSA for Dublin Airport Authority
F06A/1818	A new ground level single storey flat roof, glazed pedestrian corridor and all a	Pier A Link, Dublin Airport, Collinstown, Co. Dublin	11/12/06	08/02/07	27/03/07	Dublin Airport Authority
06A/1788	To construct an extension to the existing main terminal building at Dublin Airpo	Dublin Airport, Townland Of Collinstown, Barony Of Coolock, Co Dublin	07/12/06	13/12/06		Dublin Airport Authority
06/4522	Dublin Airport Terminal 2 will be a large, open mixed use development located to	Dublin Airport, Co. Dublin.	27/11/06	22/05/08		Dublin Airport Authority
F06A/1700	An extension to the existing ground level staff car park for 174 spaces on a sit	Cloghran House, Dublin Airport, Corballis, Co Dublin	22/11/06	12/01/07	01/03/07	Dublin Airport Authority
F06A/1658	To construct a new airside substation and an associated landside switchroom encl	Dublin Airport, Townland Of Collinstown, Co. Dublin.	16/11/06	12/01/07	01/03/07	Dublin Airport Authority Plc
F06A/1248	A 10 year planning permission for development at Dublin Airport, east of the exi	Dublin Airport, Townlands Of Collinstown, Rock And Corballis, Barony Of Coolock, Co. Dublin	31/08/06	25/10/06		Dublin Airport Authority

06/4307	Material alterations to temporary boarding gates (formally known as Temporary	Temporary Boarding Gates, OCTB, Dublin Airport, Co. Dublin.	08/08/06	16/01/08		Dublin Airport Authority
F06A/1070	The erection of a single storey extension circa 34.7m.sq. to the existing trolle	Arrivals Level, Main Terminal Building, Dublin Airport, Collinstown, Co. Dublin	31/07/06	20/09/06	08/11/06	Dublin Airport Authority Plc
F06A/1066	The erection of an 11.514m high prefabricated Drill Tower with internal and ext	Dublin Airport Authority Plc, Fire Station, Airside, Dublin Airport, Cloghran, Co. Dublin	28/07/06	13/09/06	26/10/06	Dublin Airport Authority Plc
06/4238	Material alterations to Link between Pier A and Main Terminal Building involving	Link Between Pier A & Main Terminal Building, Dublin Airport, Co. Dublin.	26/06/06	24/08/06		Dublin Airport Authority
F06A/0863	The proposed works shall consist of the erection of a single s	North-western side of the main terminal building at arrivals level, Dublin Airport.	21/06/06	21/07/06		Dublin Airport Authority plc
06/4223	Construction of a temporary structure on the second floor of the existing	Main Terminal Building, Dublin Airport, Co. Dublin., Block A.	08/06/06	19/07/06		Dublin Airport Authority
06/4218	The development consists of the removal of an existing escalator and	Atrium Of Multi-Storey Car Park, Dublin Airport, Co. Dublin.	06/06/06	25/08/06		Dublin Airport Authority
F06A/0088	The continuance of use and maintenance for 10 years of the existing 9.8 hectare	South Parallel Road, Dublin Airport, Harristown, Co. Dublin	10/04/06	18/05/06	27/06/06	Dublin Airport Authority Plc
F05A/1750	Modifications to a previously granted planning permission under planning registe	Dublin Airport, Huntstown, Barony Of Nethercross, Co. Dublin	27/03/06	20/04/06	31/05/06	Dublin Airport Authority
F06A/0379	A new inclined moving walkway and car park control facility in the atrium of the	Atrium Of Multi-storey Car Park, Dublin Airport, Co. Dublin	27/03/06	18/05/06	27/06/06	Dublin Airport Authority
06/4113	Extension of existing landside restaurant at mezzanine level.	Mezzanine Level, Main Terminal, Dublin Airport.	20/03/06	02/06/06		Dublin Airport Authority plc
F06A/0308	The construction of a new extension to the existing land-side restaurant present	The Aviator Restaurant, Mezzanine Level, Dublin Airport, Co. Dublin	13/03/06	03/05/06	13/06/06	Dublin Airport Authority
F04A/1755	To construct on airport lands, a runway, 3110m in length and 75m in width. The	Dublin Airport, Co. Dublin	03/03/06	12/04/06		Dublin Airport Authority Plc,Head Office
F06A/0232	Revise and rationalise short-term car parking, car hire facilities and bus and c	Dublin Airport, Townlands Of Collinstown, Corballis And Rock, Co. Dublin	24/02/06	19/04/06	31/05/06	The Dublin Airport Authority

06/4000	Temporary Pier Facility.	Dublin Airport, Co. Dublin.	05/01/06	22/02/06		Dublin Airport Authority
F05A/1894	Change of use to part of lower ground floor level of the main terminal building	Lower Ground Floor, Main Terminal Building, Dublin Airport, Collinstown, Co. Dublin	23/12/05	22/02/06	04/04/06	Dublin Airport Authority
F05A/1767	The development of a 3517 sq.m. gross floor area of single storey temporary airp	Dublin Airport, Townland Of Collinstown, Co. Dublin.	13/12/05	13/02/06		Dublin Airport Authority Plc
F05A/1698	The development of a 3517 sq.m. gross floor area of single storey temporary airp	Protected Structure Of The Old Central Terminal Building, Dublin Airport	01/12/05	05/12/05		Dublin Airport Authority Plc
05/4541	Pier D Departures and Arrivals Building (2 storeys) and elevated covered	Pier D, Dublin Airport, Co. Dublin.	29/11/05	08/06/06		Dublin Airport Authority (DAA)
05/4501	Material alterations associated with converting basement store to lower	Main Terminal Building, Dublin Airport.	09/11/05	12/10/06		Dublin Airport Authority
F05A/1573	Construct an alternative access route, from the main terminal building at Dublin	Dublin Airport, Collinstown, Co. Dublin	04/11/05	28/03/06		Dublin Airport Authority plc
F05A/1520	Construct an alternative access route, from the main terminal building at Dublin	Dublin Airport, Collinstown, Co. Dublin	25/10/05	03/11/05		Dublin Airport Authority plc
05/4380	The proposed work comprises of the installation of a system building and require	Security Post North, North Apron, Dublin Airport	13/09/05	02/11/05		Dublin Airport Authority
F05A/1226	The demolition of existing two storey derelict dwelling including a single store	Swords Road, Cloghran, Co. Dublin	29/08/05	13/10/05	24/11/05	Dublin Airport Authority
F05A/1119	The erection of a 34,000L capacity bunded polypropylene HDP storage tank for sto	Outdoor Cleaning Centre, Airside, Dublin Airport, Cloghran, Co Dublin	09/08/05	30/09/05	08/11/05	Dublin Airport Authority Plc.
05/4338	It is proposed to carry out material alterations to the Duty Free area of Pier B	Pier B, Terminal B, Dublin Airport.	08/08/05	22/09/05		Dublin Airport Authority
F05A/1099	Development to consist of the construction of a new air-side restaurant at mezza	Dublin Airport, Townland Of Collinstown And, The Barony Of Coolock	05/08/05	28/09/05	08/11/05	Brendan Murphy, Dublin Airport Authority
05/4285	Material alterations and extension to Pier A at Dublin Airport.	Main Terminal Building, Dublin Airport, Co. Dublin.	27/06/05	08/08/05		Dublin Airport Authority
05/4251	Material alterations associated with converting part of landside foodcourt to	Main Terminal Building, Dublin Airport.	13/06/05	08/08/05		Dublin Airport Authority

05/4168	Alterations to security search area A. Provision of a parallel security	Security Search Area A, & Sky Music Outlet & Corridor From Street, To Pier A, Airside Departures Level, Main Terminal Building, Dublin Airport.	28/04/05	29/04/05		Dublin Airport Authority
F04A/1854	Continuance of use of existing ground level car park (approx. 3,600 parking spa	Southlands, Townlands Of Harristown, Silloge & Ballymun, Co. Dublin	25/04/05	19/05/05	22/06/05	Dublin Airport Authority plc.
05/4098	Removal of existing five offices and convert area into one large open plan	Lost Property Office, Baggage Reclaim Hall, Arrivals Floor, Main Terminal Building, Dublin Airport.	04/03/05	26/04/05		Dublin Airport Authority
F05A/0218	To construct circa 615 sq.m. extension comprising additional passenger seating a	Pier A, Ground Floor Level (north Side), Dublin Airport, Collinstown, Co. Dublin.	24/02/05	18/04/05	25/05/05	Dublin Airport Authority
F05A/0120	Change of use to part of the ground floor of the Old Central Terminal Building (	Old Central Terminal Building, Dublin Airport, Collinstown, Co. Dublin	04/02/05	30/03/05	04/05/05	Dublin Airport Authority
05/4015	Sub-division of existing single office into two separate offices.	Arrivals Level, Baggage Reclaim Hall, Main Terminal Building, Dublin Airport.	18/01/05	09/03/05		Dublin Airport Authority
05/4016	Splitting existing trolley return into a new emergency exit corridor and	Trolley Return, Baggage Reclaim Hall, Arrivals Floor, Terminal Building, Dublin Airport.	18/01/05	09/03/05		Dublin Airport Authority
04/4513	Construction of a partial frame building to accommodate baggage handling	Adjacent To Main Terminal Building, Dublin Airport.	21/12/04	14/02/05		Dublin Airport Authority
04/4509	New single person office within existing open plan office area.	Level 5, Main Terminal Building, Dublin Airport.	16/12/04	11/02/05		Dublin Airport Authority
04/4445	Alterations to existing reception area in the Airport Police station at Dublin	Airport Police Station, Arrivals Road, Dublin Airport.	05/11/04	16/12/04		Dublin Airport Authority plc.
04/4422	Mainly some new partitions and fitout works for the Anna Livia lounge	Main Terminal Building, Dublin Airport.	22/10/04	19/09/06		Dublin Airport Authority
04/4285	Material alterations to areas within the terminal building (Terminal A, B & C)	Terminal Building, Dublin Airport.	23/07/04	17/08/07		Aer Rianta
04/4253	Existing shop unit, mainly upgrading works for compartmentation walls.	Departures Level, Terminal Building, Dublin Airport.	09/07/04	10/08/04		Aer Rianta, Airport Development Dept.

F03A/1353	Installation of twenty flagpoles at two locations	Dublin Airport, Corballis Road North, Collinstown, Co. Dublin	28/10/03	03/11/03		Aer Rianta cpt.
02/4463	Pier D Departures and Arrivals Building (2 storey's)	Pier D, Dublin Airport, Co. Dublin	23/12/02	25/02/04		Aer Rianta
02/4420	Temporary Pier Building and Access Corridor	Site At The North Apron, Dublin Airport, (Collinstown Townland), Co. Dublin	25/11/02	22/12/03		Aer Rianta cpt
F02A/1273	Construct and operate a temporary passenger aircraft pier and associated service	Dublin Airport Collinstown,, Co. Dublin.	11/10/02	04/12/02		Aer Rianta cpt.
F02A/1046	Construct and operate an additional passenger aircraft Pier	Dublin Airport,, Co. Dublin.	14/08/02	07/10/02		Aer Rianta CPT,
F02A/0333	New security post and canopy. Work includes new fencing,	Cargo Area Post 4,, Corballis Park,, Dublin Airport,, Co. Dublin.	02/04/02	17/04/02		Aer Rianta cpt
F02A/0142	New boundary fence, barrier, gates CCTV, intercom and	Departure Level,, South end of the Terminal,, Dublin airport.	15/02/02	14/05/02		Aer Rianta Cpt.,
02/4005	Existing Airport Police Station, with temporary	Dublin Airport Police Station,, Arrivals Road, Dublin Airport.	25/01/02	23/07/02		Aer Rianta CPT.,
01/4397	Proposed new store at maintenance base at Dublin Airport.	Peoposed new store at maintenance base at Dublin A	14/12/01	15/01/02		Aer Rianta CPT,
01/4359	70m.sq. extension, single storey to the north side of	Dublin Airport,, Fire State, Westlands, Dublin Airport.	01/11/01	04/12/01		Aer Rianta,
F01A/1257	3 no. advertising signage boards.	East Link & South Corballis Road,, adjacent to the pont at Dublin Airp	19/10/01	10/12/01	17/01/02	Aer Rianta Cpt.,
01/4335	Installation of Porta Cabin for use as a classroom.	Creche, Dublin Airport.	09/10/01	04/12/01		Aer Rianta CPT,
F01A/0882	Commence phase 1 of new works (consisting of demolition of	Dublin Airport,, Collinstown,, Co. Dublin.	29/08/01	25/10/01	05/12/01	Aer Rianta Cpt.,
F01A/0881	Commence phase 2 of new works (consisting of a new two	Dublin Airport,, Collinstown,, Co. Dublin.	29/08/01	25/10/01	05/12/01	Aer Rianta Cpt.,
01/4267	Two storey ramp accommodation building consists of 8	Rear of Pier C Building,, Dublin Airport, (two storey ramp accommodation building)	01/08/01	19/09/01		Aer Rianta CPT.,
01/4152	Internal fit-out incl. stud partitions, suspended	GL35 - 37, ramp level, Pier C, Dublin Airport.	23/04/01	20/06/01		Aer Rianta CPT,

F01A/0235	Construction of maintenance stores of 37 sq.metres.	Corballis Cross,, Dublin Airport.	07/03/01	03/05/01	12/06/01	Aer Rianta cpt.,
00/4459	Partial new mezzanine floor to be installed in the	An Post Warehouse, Corballis Cross,, Dublin Airport.	30/11/00	09/01/01		Aer Rianta Dublin Airport,
F00A/0951	Internal alterations and construction of an 70 sq.m.	Fire Station @, Westlands,, Dublin Airport,, Co. Dublin.	28/11/00	25/01/01	08/03/01	Aer Rianta
00/4437	Installation of portacabin (3m x 2.4m) for use	Pier A, Dublin Airport.	21/11/00	14/12/00		Aer Rianta cpt.,
00/4436	Installation of portacabin (3m x 2.4m) for use	Pier A, Dublin Airport.	21/11/00	14/12/00		Aer Rianta cpt.,
00/4277	2 Storey extension to existing Air Traffic	Air Traffic Control Centre at Huntstown,, Dublin Airport (on the Old St. Margaret's, Road near Boot Inn).	14/08/00	19/10/00		Aer Rianta cpt.,
00/4276	New Energy Centre - plant rooms and electrical	Air Traffic Control Centre at, Huntstown, Dublin Airport, (on the Old t. Margaret's Road,, near Boot Inn).	14/08/00	08/09/00		Aer Rianta cpt.,
00/4178	Internal fit-out to provide office/storeroom	Ramp Level Pier C at Dublin Airport, (Gridlines 16-18).	29/05/00	30/06/00		Aer Rianta,
00/4154	Six bay extension to existing main terminal	Dublin Airport, Collinstown Cross,, Co. Dublin.	15/05/00	27/07/00		Aer Rianta CPT,
F99A/1519	extension to the existing temporary Park & Ride car park.	temporary Park & Ride Car Park,, Dublin Airport,, Harristown Townland,, Co. Dublin, adjacent to the., South Parallel Road.	10/01/00	08/03/00		Aer Rianta cpt
F00A/0009	construction of new concrete apron pavement (Central	Central Apron,, Dublin Airport,, Townlands of Collinstown, Forest Gr	06/01/00	25/02/00	05/04/00	Aer Rianta cpt
99A/0720	Construction of a tensioned membrane hangar structure,	Gate 7,, Dublin Airport.	31/08/99	27/10/99	08/12/99	Aer Rianta Teoranta,
99/4281	Part two level and part three level extension of	Multi-storey car parking complex - opposite, main terminal building - Dublin Airport.	27/08/99	01/12/99		Aer Rianta cpt.,
F99A/1032	Re-construction of existing asphalt pavement to concrete	South Apron, Dublin Airport, Townland of Corballis.	18/08/99	14/10/99	18/11/99	Aer Rianta cpt

F99A/0934	Extension to the existing Blocks A & B of the Multi-	Dublin Airport.	27/07/99	23/09/99	01/11/99	Aer Rianta CPT
99/4235	Internal fit-out, within existing building.	Aer Rianta ramp staff accommodation, apron level, Pier C, Dublin Airport.	16/07/99	14/09/99		Aer Rianta Dublin,
F99A/0811	Extension of an existing lobby on the landside elevation	Dublin Airport	01/07/99	30/08/99	07/10/99	Aer Rianta CPT
99/4205	Off site fabricated 2 storey cabin.	Car Park No.6,, Dublin Airport,, Co.Dublin.	30/06/99	06/08/99		Aer Rianta Cpt.,
99/4204	Off site fabricated 2 storey cabin.	Car Park No.4,, Dublin Airport,, Co.Dublin.	30/06/99	06/08/99		Aer Rianta Cpt.,
99/4206	Off site fabricated 2 storey cabin.	Car Park No.5., Old Airport/Swords Road,, Dublin Airport,, Co.Dublin.	30/06/99	06/08/99		Aer Rianta Cpt.,
99/4179	Temporary portacabin for C.I.E. and will be a single	Temporary Portacabin for C.I.E. on the arrivals, road at Dublin Airport.	10/06/99	04/08/99		Aer Rianta CPT.,
99/4141	Temporary pre-fab for office use.	Temporary pre-fabs for SIPTU at Taxi, carpark (near Great Southern Hotel), at Dublin Airport.	12/05/99	20/08/99		Aer Rianta Property Department,
99/4121	New check in area of 6 No. new desks and 2 new	Multi-storey carpark (beside Atrium area, and opposite SPAR shop) at Dublin Airport.	19/04/99	07/05/99		Aer Rianta Property Department,
F99A/0426	construction of a temporary park and ride car park	Dublin Airport,, Harristown Townland,, Co. Dublin, adjacent to the South Parralel	13/04/99	31/05/99	07/07/99	Aer Rianta cpt.
F99A/0219	Construction of a new aircraft hagar and associated offices	Westlands,, Huntstown,, Dublin Airport.	05/03/99	30/04/99		Aer Rianta cpt
98/4352	A dispatch hut will be a single storey building	Reorganisation of car hire car park at Dublin, Airport.	22/12/98	08/02/99		Aer Rianta cpt.,
98/4354	A dispatch hut will be a single storey building	Reorganisation of car hire car park at, Dublin Airport.	22/12/98	09/02/99		Aer Rianta cpt.,
98/4351	A dispatch hut will be a single storey building	Reorganisation of car hire car park at, Dublin Airport.	22/12/98	08/02/99		Aer Rianta cpt.,
98/4353	A dispatch hut will be a single storey building of	Reorganisation of car hire car park at, Dublin Airport.	22/12/98	09/02/99		Aer Rianta cpt.,
98/4355	A dispatch hut will be a single storey building of	Reorganisation of car hire car park at, Dublin Airport.	22/12/98	09/02/99		Aer Rianta cpt.,

F98A/1208	The construction of an extension to Car Park	Car Park No. 3 at Dublin Airport,, Dardistown Townland,, Co. Dublin,, adjacent to the M1 Motorway	24/11/98	21/01/99	03/03/99	Aer Rianta cpt.
F98A/1073	construction of a link road	between sections of Carpark 3 at Dublin Airport,, Cloghran Townland,, Co. Dublin, adjacent to the M1 Motorway	22/10/98	20/04/99	17/09/99	Aer Rianta cpt.
F98A/1077	widening and upgrading of the South Corballis Road	Dublin Airport,, Co. Dublin	22/10/98	17/12/98	26/01/99	Aer Rianta cpt.
98/4268	Warehouse development, 2 adjoining warehouses with	Corballis Park,, Dublin Airport,, Co. Dublin.	02/10/98	30/11/98		Aer Rianta Cpt,
F98A/0938	proposed warehouse development of 2,369 sq. metres, to	Corballis Park,, Dublin Airport	18/09/98	16/11/98	04/01/99	Aer Rianta cpt.
98/4198	New office for SIPTU.	SIPTU Building,, Corballis Park,, Cargo Area,, Dublin Airport.	20/07/98	02/09/98		Aer Rianta Cpt,
F98A/0596	Single storey office building.	Corballis Park,, Cargo Area,, Dublin Airport.	22/06/98	19/08/98	29/09/98	Aer Rianta, cpt.
98/4121	12 Gate Pier Building. Approximately 200m long	Pier D, Dublin Airport.	01/05/98	17/06/98		Aer Rianta cpt.,
F98A/0414	for proposed development of Pier D comprising part single	Dublin Airport,, Co. Dublin	01/05/98	29/06/98		Aer Rianta cpt
98/4101	Provision of new mezzanine floor to accommodate	Pier C, Dublin Airport, Co. Dublin.	21/04/98	12/02/99		Aer Rianta,
98/4040	The development involves the relocation of the	A.T.O.S.,, Dublin Airport.	16/02/98	12/03/98		Aer Rianta cpt.,
98A/0012	construction of an external staircase in front of the	Dublin Airport,, Collinstown	12/01/98	05/03/98	15/04/98	Aer Rianta cpt
F97A/0959	the erection of 1 spectacular advertising unit	Dublin Airport	23/12/97	18/02/98		Aer Rianta,
F97A/1146	a six-bay extension to the main terminal building. The	Dublin Airport,, Collinstown	23/12/97	20/02/98	31/03/98	Aer Rianta cpt
97/4287	Six bay extension to existing main Terminal Building	Dublin Airport, Collinstown Cross,, Co. Dublin.	23/12/97	12/05/98		Aer Rianta cpt.,
97/4257	Provision of additional floor area to accommodate	Main Terminal Bld., Dublin Airport.	14/11/97	22/01/98		Aer Rianta,

F97A/0846	Reclad the six storey Technical Administration and	Corballis Road North,, Dublin Airport.	31/10/97	19/12/97	28/01/98	Aer Rianta cpt.
F97A/0938	proposed (a) reorganisation of existing ground level Car	Dublin Airport	31/10/97	19/12/97	28/01/98	Aer Rianta cpt.
F97A/0626	convert 300m sq. of existing car park into office space	Level 5,, Main Terminal Building,, Dublin Airport	25/08/97	11/09/97	21/10/97	Aer Rianta
97/4177	Upgrading of existing office area and construction	Landside of North Terminal, Dublin Airport.	24/07/97	07/08/97		Aer Rianta cpt.,
97/4161	Temporary offices for Aer Rianta Staff estimated	Car Park 4, Dublin Airport.	07/07/97	14/07/97		Aer Rianta cpt.,
F97A/0448	Construct a single storey structure for use as a car hire	Car Park 3,, Dublin Airport.	25/06/97	21/08/97	30/09/97	Budget Rent-A-Car/Aer Rianta Cpt.
97/4110	Provision of ramp accommodation for workers on	Ramp Accommodation, South Apron, Dublin Airport.	06/05/97	09/06/97		Aer Rianta cpt.,
97/4096	Construction of new presidential suite containing	Presidential (Ceremonial) Suite, North Terminal,, Dublin Airport.	21/04/97	20/05/97		Aer Rianta CPT,
F97A/0155	New four storey office building with separate entrances to	Vacant site between A.T.O.S. Building and taxi holding area, at Dublin Airport.	10/04/97	01/05/97	11/06/97	Aer Rianta cpt.
F97A/0250	Construction of a new two-storey building to accommodate	Dublin Airport.	02/04/97	28/05/97	10/07/97	Aer Rianta cpt.
97/4077	New 4 storey office building with credit union offices	Vacant Site between A.T.O.S. Building &, Taxi Holding Area, Dublin Airport.	25/03/97	20/05/97		Aer Rianta,
97/4069	Construction of new presidential suite containing a	Presidential (Ceremonial) Suite, North Terminal,, Dublin Airport.	14/03/97	09/04/97		Aer Rianta cpt.,
F97A/0082	Demolition of single story extension to the airside of the	Dublin Airport.	11/02/97	19/03/97	01/05/97	Aer Rianta cpt.
97/4037	Conversion of ground floor of the OCTB and construction	Old Central Terminal Building,, Dublin Airport.	10/02/97	25/03/97		Aer Rianta cpt.,
97/4038	New passenger waiting lounges and boarding gates.	Pier `A' at Dublin Airport, Co. Dublin.	10/02/97	21/04/97		Aer Rianta cpt.,
F96A/1002	Change of use of the ground floor to passenger lounges,	Old Terminal Building,, Dublin Airport.	20/12/96	18/02/97	14/04/97	Aer Rianta.
F96A/1000	Construction of a new passenger lounge, boarding gates and	Pier A,, Dublin Airport.	20/12/96	18/02/97	14/04/97	Aer Rianta.

F96F/378	Construction of Glazed Checkin area Below Departures	VIP Carpark, Below Departures Road,, Dublin Airport.	12/12/96	10/02/97		Aer Rianta cpt.,
F96A/0894	New check-in facility and baggage hall.	Arrivals Road,, Dublin Airport.	20/11/96	16/01/97	04/03/97	Aer Rianta CPT.
F96F/353	New single storey building located under departures	Energy Centre, Dublin Airport, adjacent, departures ramp.	15/11/96	08/01/97		Aer Rianta,
F96F/348	Glazed Lobby, to provide Kerb-Side Check-In Facilities	Beside Departures Lobby, Main Terminal Building,, Dublin Airport.	07/11/96	17/12/96		Aer Rianta Cpt.,
F96A/0824	Build a Kerb-side check-in facility adjacent to the	Main Terminal Building,, Dublin Airport.	29/10/96	11/12/96	22/01/97	Aer Rianta cpt.
F96F/311	New boiler house including chiller room and chp room.	East End Terminal Bldg., Adjacent Spiral Ramps,, Dublin Airport.	23/09/96	19/11/96		Aer Rianta CPT,
F96F/291	Change of use of existing single storey canteen to	T.A.S.C. Building,, Dublin Airport.	09/09/96	30/10/96		Aer Rianta CPT.,
F96F/283	New maintenance building with offices and workshops.	Dublin Airport, Corballis Road, South adjacent to Taxi Rank.	04/09/96	23/10/96		Aer Rianta cpt.,
F96A/0563	New boiler house transformer, chiller room and ancillary	East End of Terminal Building, Dublin Airport.	01/08/96	26/09/96	05/11/96	Aer Rianta cpt.,
F96F/229	Renovation of existing storage out building adjacent	Airport Police Dog Patrol Unit, Castlemoate House,, Dublin Airport.	26/07/96	17/09/96		Aer Rianta Cpt.,
F96A/0552	Single and two-storey maintenance building, car parking,	Corballis Road South,, Dublin Airport,, Co. Dublin.	26/07/96	24/09/96	05/11/96	Aer Rianta
F96A/0524	Conversion of an existing building to accommodation for the	Adjacent to Castlemoate House,, Dublin Airport.	19/07/96	13/09/96	21/10/96	Aer Rianta cpt
F96F/219	Offices to be built on existing flat roof 'Commerically	Link Building, Dublin Airport.	17/07/96	10/03/97		Aer Rianta CPT,
F96A/0516	Change of use of offices and for new elevations to	TASC Building,, Dublin Airport	11/07/96	09/09/96	21/10/96	Aer Rianta cpt.
F96A/0455	Build offices on the roof of the link building and also	Dublin Airport	19/06/96	14/08/96	23/09/96	Aer Rianta Cpt,
F96A/0290	One 18ft. x 10 ft. Spectacular advertising unit	first roundabout,, exit road,, Dublin Airport	26/04/96	24/06/96		Aer Rianta
F96F/045	Steel columns and beams, reinforced concrete floor	Pier A, Dublin Airport.	04/03/96	25/04/96		Aer Rianta cpt.,
F96A/0122	New shop and store at first floor level	Pier A,, Dublin Airport	27/02/96	28/03/96	08/05/96	Aer Rianta cpt.
F95F/200	Extensions to existing terminal building known as	Dublin Airport Collinstown, Co. Dublin.	22/12/95	20/05/96		Aer Rianta,

F95F/157	Conversion of existing parking bays to store rooms and	Garden Complex,, Dublin Airport,, Co. Dublin.	26/10/95	03/04/96		Aer Rianta CPT.,
F95F/142	Conversion of existing car parking on level 5,	Level 5, Terminal Building, Dublin Airport.	28/09/95	15/02/96		Aer Rianta cpt,
F95A/0681	Conversion of existing tractor bays to offices	Garden Compound,, Dublin Airport	20/09/95	16/11/95	03/01/96	Aer Rianta cpt
F95A/0677	Relocate offices within the proposed warehouse/office	Cargo Terminal No. 2,, Corballis Park,, Dublin Airport.	19/09/95	16/11/95	24/02/96	Aer Rianta cpt.
F95F/113	Addition of retail units, associated store and staff	Multi Storey Carpark Concourse,, Dublin Airport,, Co. Dublin.	23/08/95	28/09/95		Aer Rianta CPT.,
F95F/112	Construction of extension to existing warehouses and	DHL & Servisair,, Corballis Park,, Dublin Airport,, Co. Dublin.	21/08/95	18/10/95		Aer Rianta CPT,
F95A/0577	Conversion of existing car park to office accommodation and	Level 5,, Main Terminal Building,, Dublin Airport	09/08/95	04/10/95	15/11/95	Aer Rianta cpt.,
F95F/096	Alterations & extensions to Ground Floor of Pavilion	Pier 'B' Pavilion,, Terminal Building,, Dublin Airport.	24/07/95	13/09/95		Aer Rianta Cpt.,
F95A/0153	Install signage and associated works on the road network,	Dublin Airport	09/03/95	03/05/95	14/06/95	Aer Rianta
F95F/012	Maintenance facility with carpark, yard and ancillary work.	South Corballis Road,, Dublin Airport,, Co. Dublin.	01/02/95	28/03/95		Aer Rianta,
F95A/0014	Single and two storey Maintenance Building, car parking,	Corballis Road South,, Dublin Airport,, Co. Dublin	11/01/95	09/03/95		Aer Rianta
F94F/0159	Conversion of existing car park to office	Level 5 Main Terminal Building, Dublin Airport.	07/12/94	20/01/95		Aer Rianta CPT,
F94A/0777	Conversion of part of existing car park to office	Level 5 Main Terminal Building,, Dublin Airport	16/11/94	11/01/95		Aer Rianta cpt.
F94A/0707	Erection of a sign and external alterations	Old Central Terminal Building,, Dublin Airport.	24/10/94	21/12/94	01/02/95	Aer Rianta, cpt.,
F94F/0117	Office accommodation to lst floor workshop/store	Dublin Airport at the junction of old Naul Road, and Collinstown Road.	09/08/94	21/09/94		Aer Rianta,
F94F/0112	Staff building one of group of buildings - make	Gardening Complex,, Dublin Airport.	02/08/94	21/09/94		Aer Rianta CPT.,
F94A/0466	Gardening complex at main entrance road	Dublin Airport	30/06/94	24/08/94	09/03/95	Aer Rianta Cpt.
F94F/0082	General Warehouse & Office Development - aviation	Cargo Area, Corballis Park, Dublin Airport.	17/06/94	04/08/94		Aer Rianta,

F94F/0052	New Lounge pavilion with link building which will	Extension to Pier A at Dublin Airport.	21/04/94	24/05/94		Aer Rianta,
F94F/0035	(a) Multi-storey car park (6 levels).	Dublin Airport.	14/03/94	05/05/94		Company Secretary, Aer Rianta Teo.,
93F/0263	Four unit warehouse.	Cargo Area, Corballis Park, Dublin Airport.	29/07/93	15/09/93		Aer Rianta C.P.I.,
93F/0089	Extension and internal alterations to Dublin Airport	Dublin Airport Worksplace Nursery, Dublin Airport.	07/04/93	19/05/93		Aer Rianta,
92F/0067	Extension to an existing building which is used for	Airfield Maintenance Base Extension,, South Parallel Rd.,, Collinstown,, Dublin Airport.	03/11/92	16/11/92		Aer Rianta,
92F/0061	Warehouse walls/roof, insulated metal decking,	Nippon/McDermott Warehouse, Cargo Area,, Dublin Airport,, Collinstown, Co. Dublin.	27/10/92	17/12/92		Aer Rianta,
92F/0056	Changes to door locations, proposed new dining room and	Aer Rianta Training Centre,, Castlemoate House,, Dublin Airport.	22/10/92	10/11/92		Aer Rianta cpt.
92F/0033	New Dining Room and Extension to Existing	Aer Rianta Training Centre, Castlemoate House,, Dublin Airport.	15/09/92	08/10/92		Aer Rianta,
92F/0028	Enclosures of part of existing carpark 2 in main	Car Park 2 Level,, Main Terminal Building,, Dublin Airport.	04/09/92	23/11/92		Aer Rianta.

Annual Safety Performance Review for Ireland 2022



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Foreword



Welcome to the Irish Aviation Authority's (IAA's) Annual Safety Performance Review (ASPR) for 2022, the year when the Covid-19 pandemic finally relinquished its grip on the world, thanks to mass vaccination programs and the waning virulence of later variants of the disease.

This all paved the way for the lifting of travel restrictions and summer 2022 saw a welcome return towards normal operations. This pent-up demand for travel exceeded expectations and, in some instances, operators struggled to reactivate their personnel and systems in time to meet the demands. Throughout this phase safety of flight was always considered the highest priority.

The Irish civil aviation industry experienced a steady recovery in 2022. There was a 96% increase in Commercial Air Transport (CAT) movements in 2022 compared to 2021. Similarly, the level of Irish ATC controlled flight hours was up 86% on 2021, and remained only 10% down on the level of activity recorded in 2019. The number of aircraft on the Irish register increased in 2022 with a slight decrease in the number of aircraft in storage.

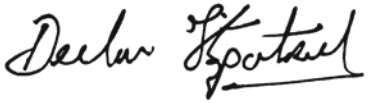
Globally the fatal accident rate in the commercial aviation industry flights reduced from 0.27 per million sectors in 2021 to 0.16 for 2022. In Ireland there were no CAT fatalities in 2022. The main statistics for accidents and serious incidents in commercial aviation haven't revealed any pandemic related issues in recent years and show continuing reducing trends into the post pandemic recovery era.

Regrettably there were 2 fatalities in General Aviation (GA) in Ireland in 2022 and the IAA offers sincere sympathies to family and friends of the deceased in these cases. The IAA works with the experts in general aviation to facilitate the sharing of the lessons learned from accidents and serious incidents in order to help prevent fatalities in this domain.

Looking forward, as the industry endeavours to build back up on 2022's recovery, challenges such as geopolitical uncertainty, rising fuel and living costs, disrupted supply chains, climate change concerns and cyber security threats loom large on the horizon. The risk management skills gained over the pandemic era will be required more than ever to monitor hazards and mitigate risks in a safety critical industry aiming to regain lost ground.

The safety performance data presented here forms one element of the safety management process in the Irish state safety programme. It would not be possible to develop and share this intelligence without a healthy safety occurrence reporting culture. The IAA encourages and welcomes the active participation of all involved in any aspect of civil aviation to report safety concerns to their organisation or to the IAA at (https://www.iaa.ie/safety/safety-reporting) so that lessons can be learnt and safety levels continuously improved.

Thank you for taking the time to read this review.



Declan Fitzpatrick, IAA CEO

Executive Summary

The Irish Aviation Authority (IAA) herewith presents its Annual Safety Performance Review for Ireland for 2022. This is the 14th consecutive year of publication which presents the safety performance of Irish civil aviation to the end of 2022 along with the main safety issues as identified by the IAA. This review is prepared using State Annex 13 data and occurrence reporting data collected in accordance with EU 376/2014 along with safety information provided at EU (e.g. EASA) and global (e.g. ICAO) levels.

Safety performance information is aggregated and presented under the following four primary sectors of Irish civil aviation, which are defined by their principal type of operation and resultant similarity in terms of risk exposure:

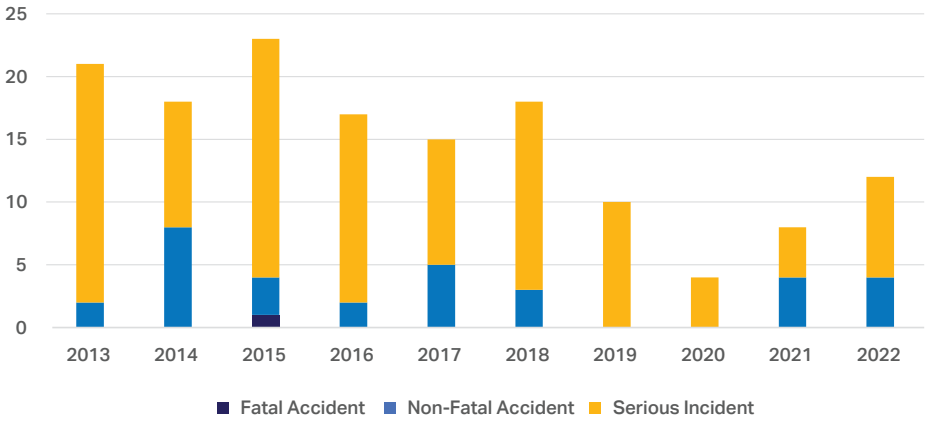
- The Irish Fixed-Wing Commercial Air Transport Sector
- The Irish Commercial Helicopter Sector
- Air Navigation Services and Aerodromes in Ireland
- General Aviation in Ireland

Opening Infographics provide a summary of the main performance statistics for each of these sectors. More detail on the supporting analysis is presented within the associated chapters on a tiered basis, with Annex 13 data, occurrence reporting charts and a break-down of the associated safety issues.

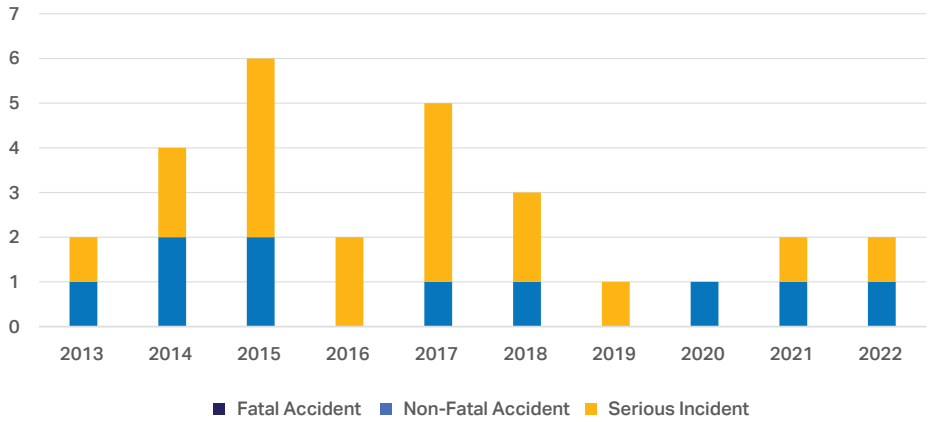
As 2022 progressed the Covid pandemic's influence over the aviation industry waned, with aviation operations making a welcome return to levels approaching those of pre-Covid by year end. This year's review differs from previous years with the occurrence reporting graphs separated into three timeframes, pre-Covid (2017-2019), Covid (2020-2021) and post Covid (2022). The intention is to enable a comparative analysis of safety performance between those periods, identify any peculiarities in the risks posed during the pandemic and observe any similarities between pre-Covid patterns and the return to the new normal.

Ten Year Charts

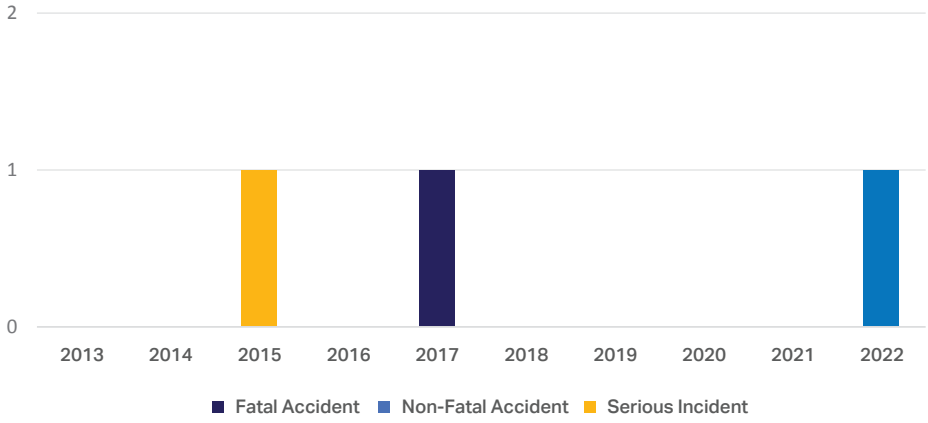
Commercial Air Transport - Fixed Wing



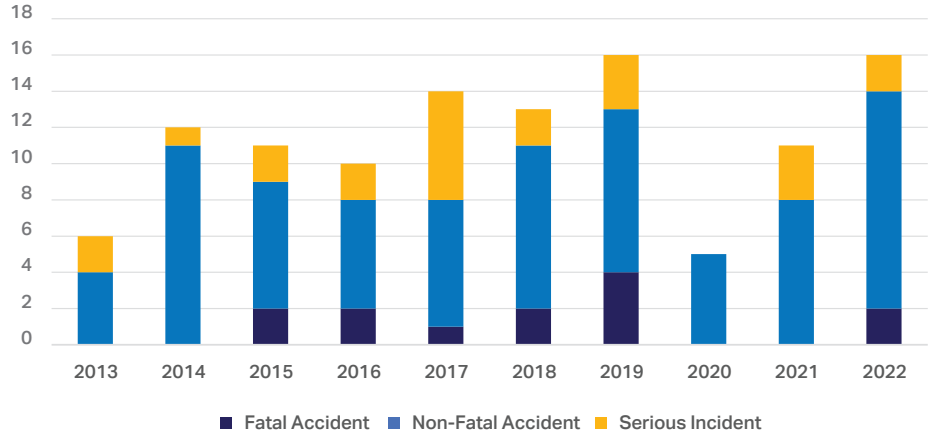
Commercial Air Transport at Irish Certified/licenced Aerodromes with ATS



Commercial Helicopter



General Aviation



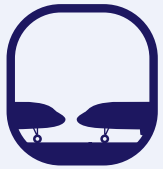
Irish Air Fixed-Wing Commercial Air Transport Sector



During 2022 Irish fixed-wing aircraft engaged in CAT were involved in 4 non-fatal accidents and no fatal accidents. Between 2018 and 2022 there were 11 non-fatal accidents and no fatal accidents. The categories most commonly applied by the Safety Investigation Authority (SIA) to accidents over this 5 year period were:



Ground Handling



Ground Colllision



Turbulence Encounter

There were 42 serious incidents between 2018 and 2022, 8 of which occurred in 2022. The categories most commonly applied by investigating SIAs to serious incidents were:



System failure or malfunction



Airprox/near midair collision



Runway Incursion (non-animal)

Irish AOC holders submitted 7,532 MORs in 2022. The categories most commonly assigned by the IAA to these MORs were:



System failure or malfunction



Birdstrike



Cabin Safety

During the pandemic years, 2020 & 2021, Irish AOC holders submitted 7,337 MORs. The categories most commonly assigned by the IAA to these MORs were:



System failure or malfunction

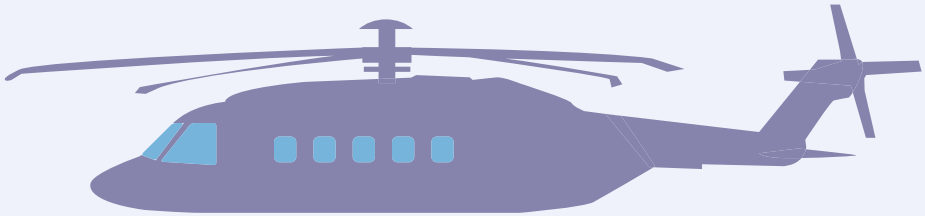


Birdstrike



Ground Handling

The Irish Commercial Helicopter Sector



The accident and serious incident figures provided cover helicopter operators who hold an AOC issued by the IAA and the helicopter aviation activity carried out is in Irish territory undertaking CAT and declared activities.

Between 2018 and 2022, these operators experienced 1 non-fatal accident which occurred in 2022 and was categorised as 'Loss of control- inflight'.

Helicopter operators who hold an AOC issued by the IAA submitted 37 MORs in 2022. The categories most commonly applied to these MORs were:



System failure or malfunction



Other



Air traffic management

Between 2020 and 2021, helicopter operators who hold an AOC issued by the IAA submitted 73 MORs. The three most commonly applied categories to these MORs were:



System failure or malfunction



Other



Ground Handling

Air Navigation Services and Aerodromes in Ireland



Between 2018 and 2022, there were 4 non-fatal accidents and 5 serious incidents involving CAT aircraft at Irish certificated/licenced aerodromes that provide ATC services. During 2022, there was 1 non-fatal accident, no fatal accident and 1 serious incident.

The ATS providers submitted 1,712 MORs in 2022. The three occurrence categories most commonly assigned to these MORs were:



Navigation Errors



Air traffic management



Security Related

Between 2020 and 2021, ATS providers submitted 1,767 MORs. The three most commonly assigned occurrence categories were:



Navigation Errors



Air traffic management



Windshear Thunderstorm

Aerodrome operators submitted 642 MORs in 2022, the three most commonly assigned occurrence categories were:



Ground Handling



Navigation Errors



Birdstrike

Between 2020 and 2021, Aerodrome operators submitted 747 MORs, the three most commonly assigned occurrence categories were:



Aerodromes



Ground Handling

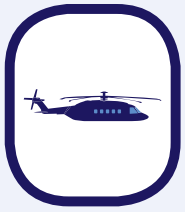


Birdstrike

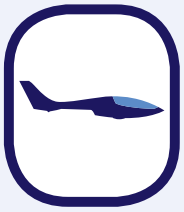
General Aviation in Ireland 2018-2022



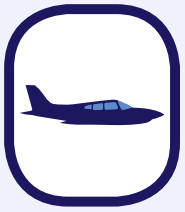
Aeroplanes over 2,250 kg
1 Fatal Accident
4 Non-Fatal Accidents
0 Serious Incidents



Helicopters over 2,250 kg
0 Fatal Accidents
0 Non-Fatal Accidents
0 Serious Incidents



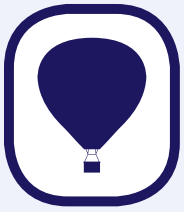
Sailplanes and Powered Sailplanes
0 Fatal Accidents
3 Non-Fatal Accidents
0 Serious Incidents



Aeroplanes under 2,250 kg
2 Fatal Accidents (incl. 1 homebuilt)
18 Non-Fatal Accidents (incl. 5 homebuilt)
10 Serious Incidents (incl. 2 homebuilt)



Helicopters under 2,250 kg
1 Fatal Accident
1 Non-Fatal Accident
0 Serious Incidents



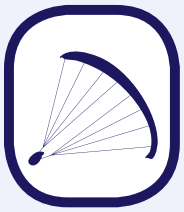
Hot Air Balloons
0 Fatal Accidents
0 Non-Fatal Accidents
0 Serious Incidents



Microlight
2 Fatal Accidents
8 Non-Fatal Accidents
0 Serious Incidents



Gyrocopters
0 Fatal Accidents
1 Non-Fatal Accident
0 Serious Incidents



Paragliders, Powered Paragliders and Powered Parachutes
2 Fatal Accidents
6 Non-Fatal Accidents
0 Serious Incidents

SECTION A

INTRODUCTION



The long-awaited post pandemic recovery arrived in 2022. While the year commenced with one of the final variants, Omicron, it proved to be less impactful than earlier variants and by the second quarter travel restrictions were lifting across different countries thus allowing aviation to restart and meet the pent-up demand for travel, be it for business or pleasure.

While the return to normal operations was welcome and anticipated its rapidity caught operators off guard, especially airport operators who faced the challenge of staff shortages and system capacity in all areas but especially in ground handling and security. As with any complex system the whole aviation infrastructure requires time to properly gear up.

The shock invasion of Ukraine by Russia piled on further pressure with airspace closures in Ukraine and neighbouring countries impacting traffic flows for Air Navigation Service Providers (ANSPs). The invasion also resulted in a sizeable number of foreign leased Irish registered aircraft being unlawfully appropriated by Russian authorities and these aircraft continue to remain in this legal limbo with a high degree of uncertainty around recovery of these assets to operations outside of Russia.

The IAA itself underwent significant restructuring in 2022.The ANSP and Safety Regulatory Division (SRD) subsections separated into two completely independent corporate entities; the newly incorporated AirNav Ireland delivering the ANSP functions and the IAA expanding its regulatory remit with the merging of the Commission for Aviation Regulation (CAR) economic and consumer protection functions.

The IAA is responsible for ICAO Annex 19 functions of safety performance monitoring in the State. In addition to the regulatory oversight of the Irish civil aviation industry, it monitors safety performance of the industry through the collection, analysis and exchange of safety data. The collection and analysis of occurrence reports in accordance with Regulation (EU) No 376/2014 enables enhanced safety intelligence that allows for the identification and optimisation of safety measures that can target the areas of greatest risk.

This annual report presents an aggregated summary of the main safety intelligence derived from safety performance monitoring at State level. In addition, tailored reviews of pertinent safety issues are conducted with individual regulated organisations.

The data sources for this report include the independent Irish Air Accident Investigation Unit for accident and serious incident investigations as well as the analysis of occurrence reports submitted to the IAA. In accordance with regulations the statistical information is presented in an aggregated manner so that individuals involved are not identified.

Sadly, there were 2 fatal accidents in Irish civil aviation in 2022 and the report addresses these and a number of fatal accidents in previous years, the IAA offers sincere sympathies to family and friends of the deceased in all these cases. The IAA, in conjunction with all the stakeholders in the civil aviation sector in Ireland, has implemented safety risk management processes to try to prevent fatalities in aviation, and sharing the lessons learned from such tragic accidents is a vital part of the process.

The overall theme of 2022 was steady recovery as evidenced in the following Irish air traffic facts. Total airspace movement levels in 2022 increased 94% on 2021 levels and were only down 10% when compared to 2019. The pattern was similar for Aerodrome movements with 2022 registering a 123% increase on 2021 and remaining only 12% down on 2019 levels.

Occurrence Reports

Aviation safety is supported by a robust regulatory framework that includes strict regulations on occurrence reporting. The regulations include mandatory provisions for who should report safety occurrence and the type of occurrences that must be reported. They also require organisations and States to establish appropriate systems to facilitate the collection and analysis of such reports and provide follow up details of the results of the investigation of these reports. The regulations also provide for voluntary reporting systems to enable any person to report occurrences to address any safety concern. For further details on how to report to the IAA see https://www.iaa.ie/safety/safety-reporting.

Occurrence reports are subject to investigation and analysis by regulated organisations and the IAA, and both entities are required to ensure that any safety concerns are addressed in a manner commensurate with the level of safety risk identified. To achieve this objective, each occurrence report is subjected to a risk classification that is used to target the higher risk occurrence for more immediate safety action. Only a very small proportion of occurrences reported to the IAA concern an accident or a serious incident.

The IAA uses an EU developed aviation risk classification methodology, Airline Risk Management Solutions (ARMS), that is used to assign a risk score to each individual occurrence. The methodology includes a risk matrix with associated traffic light colour scheme, whereby green represents low risk, amber represents medium risk and red represents high risk. Where relevant, statistical charts on occurrences provided in this review include this risk classification colour scheme. The vast majority of occurrence reports to IAA were classified as low risk, however it remains important to monitor these events to ensure they remain under control.

The IAA, in common with all other aviation authorities across the world, receives thousands of occurrence reports each year that are subject to safety analysis. To support this analysis, ICAO has endorsed an occurrence reporting "Common Taxonomy" which facilitates the categorisation of events using standardised terminology to improve the aviation community's capacity worldwide to focus on common safety issues. The ICAO taxonomy for occurrence category is used throughout this report. The same occurrence category may be assigned to an occurrence involving an actual accident e.g. LOC-I (Loss of Control – Inflight) or to a precursor event that has been identified previously as part of the chain of events leading to a LOC-I accident, such as aircraft stall warning.

Independent Air Accident Investigation

The Irish Air Accident Investigation Unit (AAIU) is responsible for investigating the more serious occurrences that have resulted in an aviation accident or a serious incident as defined by Annex 13 to the International Civil Aviation Organisation Convention, REGULATION (EU) No 996/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, and Statutory Instrument No. 460 of 2009.

The AAIU investigates civil aviation accidents and serious incidents that occur in Ireland. Occurrences involving an Irish AOC holder or an Irish registered aircraft that occur outside of Ireland may be investigated by a foreign safety investigation authority (SIA) or that SIA may delegate the investigation fully or in part to the AAIU. The AAIU maintains a register of all accidents and serious incidents of concern to Ireland, including those investigated by AAIU and those investigated by a foreign SIA. It operates independently from the IAA.

The statistics on accidents and serious incidents presented within this document have been compiled using the data provided by the AAIU. All accidents and serious incident investigations the AAIU have initiated, or have been notified of, are included in this report, even if the investigation itself is ongoing and the final investigation report has not been finalised. The classification of an occurrence (i.e. accident, serious incident, incident) is subject to change until the completion of the investigation, and consequently this may lead to minor differences in the details provided between consecutive Annual Safety Performance Reviews.

Layout of annual safety performance review

This report is divided into four sections to address:

- commercial air transport aeroplane operations
- commercial helicopter operations
- aerodromes and air navigation services
- general aviation

In each section the main statistics of safety performance of the Irish civil aviation system are presented for accidents, serious incidents and occurrences. The report then focuses on identifying the main safety issues that emerge from the analysis of the data.

The vast majority of reports submitted to the IAA come from organisations who must investigate and analyse their own reports and identify risks and risk mitigating actions as part of their safety management systems. The role of the IAA, and this review in particular, is to share safety information and highlight the cross-sector safety issues that

emerge from analysis of the safety performance of multiple organisations operating within that sector.

Aviation is a global business, and the IAA does not depend solely on the performance of the Irish civil aviation industry to identify safety issues. The European Aviation Safety Agency (EASA) produces an annual safety review of the safety performance of civil aviation across all EU Member States (including Ireland) and ICAO produces similar safety performance information on a global basis. The IAA participates in the EU risk management processes through the EASA Advisory Bodies and Network of Analysts and takes due cognisance of the safety priorities identified at both European and global level in the analysis of safety performance in this report.

As part of the risk management processes in the IAA, the safety issues are recorded in sector-based registers where they are subjected to a risk assessment to prioritise the areas of greater safety concern and to plan the relevant actions to mitigate the risk identified. A summary of the actions that emerge from this process is provided in the State Plan for Aviation Safety (see www.iaa.ie/statesafetyplan).





SECTION B

THE IRISH FIXED WING COMMERCIAL AIR TRANSPORT SECTOR

Introduction

The Irish fixed-wing Commercial Air Transport (CAT) industry considered here incorporates two types of commercial organisations:

- operators who hold an Irish Air Operators Certificate (AOC) issued by the IAA (12 fixed- wing operators at the end of 2022).
- operators who operate an Irish registered aircraft on an AOC issued by a foreign State under Article 83 bis of the Chicago Convention, hereafter referred to as the 'Irish lease fleet'.

As of the 31st of December 2022, there were 701 land aeroplanes on the Irish aircraft register engaged in CAT operations for both Irish AOC holders and foreign AOC operators with the Irish lease fleet. This included 119 aircraft in storage, down slightly on last year's 128 which was the highest number ever recorded.

Part-NCC (non-commercial operations with complex aircraft) operations increased throughout the year, primarily for private business jet activities. Although such operations are not commercial, they are included within this section, as they are subject to a similar risk profile as commercial operators and both have commonalities in their safety issues and key risk areas.

As 2022 commenced Covid-19 lockdown restrictions were still in place, fortunately these were gradually lifted when the Omicron variant wave was deemed to have passed by the end of January 2022. The pent-up demand for travel after two years of lockdown steadily materialised through the remainder of the year with progressively increasing passenger numbers. By summer airports were experiencing congestion due to the greater than anticipated speed of the recovery along with a shortage of staff in aviation organisations. The steady trajectory of the recovery was maintained to the end of the year as each month's movements closed the gap on 2019's pre-Covid travel levels. This resulted in a total increase of 96% in CAT movements in 2022 compared to 2021, however overall, this was still 42% lower than the levels observed in 2019.

As with the impact of Covid, the recovery characteristics have varied in different sectors. Dedicated cargo operations continued to see positive growth in 2022, albeit not to the same extent as seen in 2021 when the growth in e-commerce, supply chain demands caused by the global health crisis and the decreased belly-hold capacity of passenger aircraft all drove increased demand.

While the industry utilised the risk management capability of their safety management systems (SMS) as an integral business tool to successfully negotiate a pathway through the risks associated with the return to the new normal as the pandemic waned, new unforeseen threats resulting from the Russian invasion of Ukraine started to impact the recovery. Russian sanctions had the most grievous impact on aircraft lessors that had aircraft on lease to Russian carriers. At the time of Russia's invasion of Ukraine, around 500 aircraft owned by foreign lessors were operating in the country with an estimated market value of US$10 billion. Sanctions imposed by the EU and the US prohibited leasing assets into Russia, and all insurance policies were cancelled.

The 'Effectiveness of safety management (SI-0041)' is one of the safety issues listed in the European Plan for Aviation Safety (EPAS) 2023-2025 for CAT A (Commercial air transport - aeroplanes). This safety issue covers the regulatory requirements and promotion of SMS principles, on both aviation authorities and organisations, and the capability to detect and anticipate new emerging threats and associated challenges. Similarly, the Irish State Plan for Aviation Safety (2023-2025) includes actions to help enhance the effectiveness of safety management at the levels of both the regulator and the regulated organisations in Ireland.

The occurrence reporting rate throughout the two Covid-19 years (2020-2021) was higher than in the preceding three years pre-covid. While this stronger reporting rate decreased slightly post covid in 2022, it was still significantly stronger than that recorded pre-covid. These increased reporting rates indicate that CAT operators' SMSs continue to deliver a maturing reporting culture despite the challenges experienced by aviation staff in the return to new normal operations.

There was a twofold increase in occurrence reports in 2022 compared to 2021 for the Irish lease fleet, however this still only represented 38% of the number of reports received in 2019. While there is currently no exposure data for this sector the pattern in occurrence reports appears to be reflective of industry outline reports such as PWC's 2023 Aviation Industry Review & Outlook and in line with the number of Irish aircraft still in storage.

Accidents and serious incidents

Over the last five years, aeroplanes operated by the Irish AOC holders or on the Irish lease fleet were involved in 13 accidents (4 in 2022) and 44 serious incidents (8 in 2022) as summarised in Table B.1 below.

Table B.1: **Accidents and serious incidents involving Irish registered aeroplanes engaging in CAT**

Year	No. on Irish aircraft register	Accidents			Serious incidents
		Non-fatal	Fatal	Total	
2018	927	3	0	3	15
2019	815	0	0	0	10
2020	683	0	0	0	4
2021	660	5	0	5	5
2022	701	3	0	3	8
Total		11	0	11	42

There were no fatal accidents, 4 non-fatal accidents and 8 serious incidents in 2022. The 4 non-fatal accidents all related to passengers suffering an injury during disembarkation. There were 3 serious incidents categorised as mid-air collision (MAC) due to loss of separation and 2 serious incidents categorised as fire smoke non-impact (F-NI). There was 1 serious incident categorised as air traffic management (ATM) involving an Irish registered aircraft and an aircraft from another jurisdiction. There was also 1 serious incident categorised as significant component failure – non-powerplant (SCF-NP) and a serious incident categorised as both a runway excursion (RE) and loss of control on the ground (LOC-G).

Figure B.1 outlines the categories assigned to the accidents and serious incidents that occurred in the past five years.

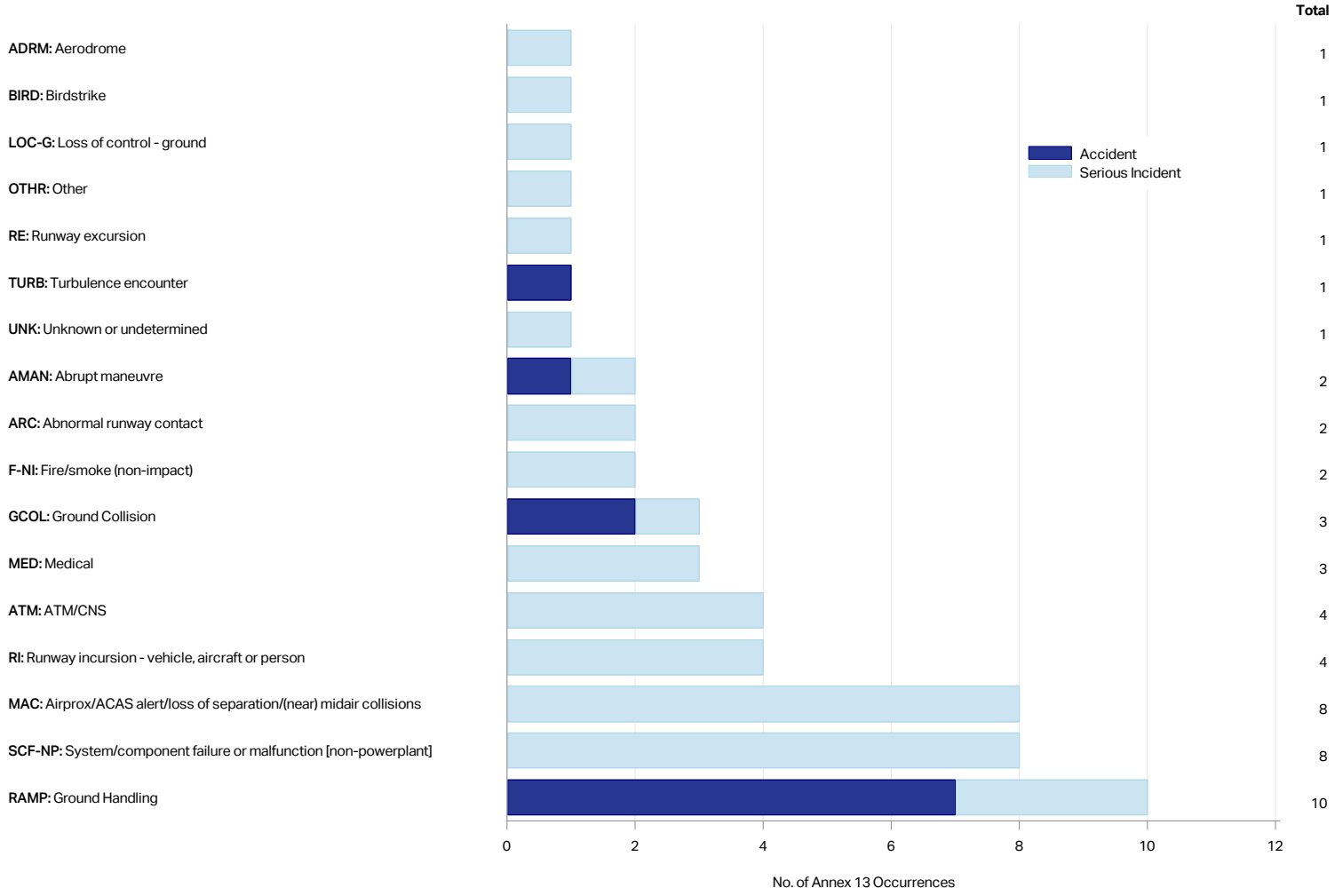


Figure B.1: Categorisation assigned by the investigating SIA to the Annex 13 occurrences

Occurrences

Overall, the rate of aircraft accidents and serious incidents involving Irish commercial air operators provides a Tier 1 Safety Performance Indicator (SPI) for the State Safety Program (SSP). In addition, accident investigation is instrumental in determining the root cause and contributory factors of accidents without apportioning blame. It ensures that past mistakes are not repeated, and the lessons learnt are shared. The insight gained from safety occurrence reports provides the Tier 2 SPI and adds another layer of intelligence that enables a proactive and predictive element in the timely detection of operational hazards and system deficiencies. This additional awareness can help focus resources towards the areas most in need of mitigation in order to promptly improve aviation safety performance.

As the industry grappled with its emergence from various pandemic lockdowns and the challenges posed in restarting operations with depleted resources both in monetary and human experience terms the chances of being on a flight operated by an Irish AOC Holder that experienced a safety occurrence remained very low. In 2022 Irish AOC Holders flew 614,899 flights and submitted 7,532 occurrence reports. While this represented a significant 96% increase in movements compared to 2021, it was still down 51% on 2019. Over 98% of these flights passed off without any safety occurrence that required reporting to the IAA and over 99.99% of these flights passed off without being involved in an accident or serious incident. In 2022 there were zero fatalities associated with Irish CAT operations.

The same common occurrence category taxonomy is used by the AAIU and the IAA. Analysis of reported mandatory occurrences by the IAA takes into further consideration factors that could be assessed to be precursors to accidents and/or serious incidents.

A breakdown of the top occurrences submitted by Irish AOC Holders involved in CAT operations by occurrence category and risk classification band (ref Section A) is presented in the following 3 graphs, Figures B.2(a), B.2(b) and B.2(c). The first graph Figure B.2(a) presents the data for 2017 to 2019 (pre-Covid), the second graph Figure B.2(b) presents that data for 2020 and 2021 combined (Covid years) with the third graph Figure B.2(c) presenting the data for 2022 (post Covid). The intention is to enable a comparison of any emerging pattern of predominant occurrence categories pre-Covid (2017-2019), during Covid (2020-2021) and post-Covid (2022).

The most reported occurrence categories largely remain the same through all three timeframes with the exception of MED (medical) which dropped considerably during Covid years due to reduced passenger numbers and has remained low in 2022 as passenger numbers returned to normal.

Birdstrike moved from the 4th most common occurrence pre-covid to 2nd both during the pandemic and post-Covid, it was one of the emerging risks identified in the COVID-19 Safety Risk Portfolio, “increased presence of wildlife on aerodromes.” It is also the most common event type for 2022 as outlined in Figure B.3 which provides more granularity with the top event types reported to the IAA from the CAT aeroplane sector for 2022. The 2nd most common event type reported in 2022 was ‘difficult/unruly passengers’ which is one of the topics mentioned in the EASA SIB 2023-05: “Possible Risks Emerging During Summer 2023” and also forms part of the focus of EASA’s 2023 Ready to Fly Campaign.

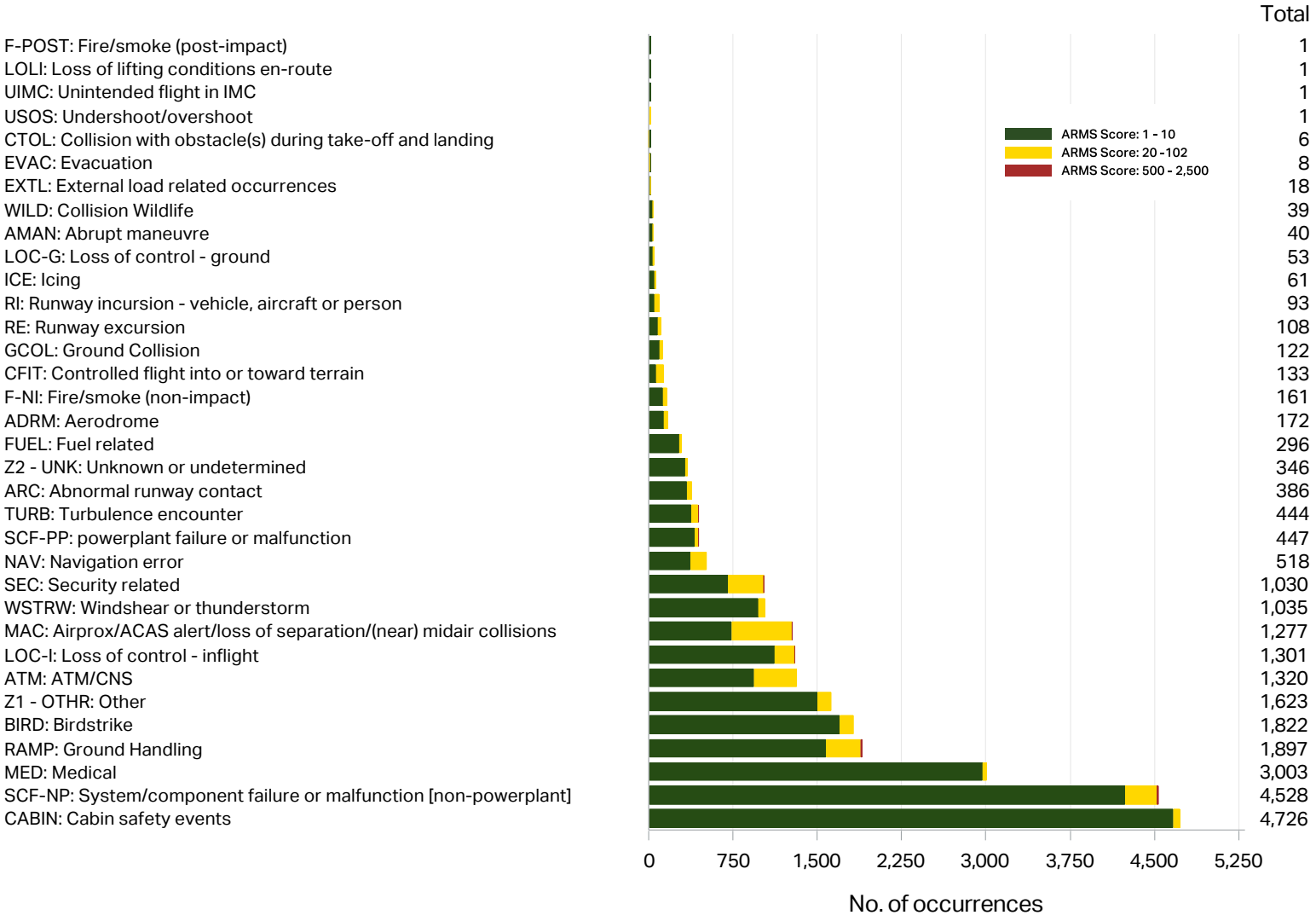


Figure B.2(a): Categorisation of MORs Involving Irish CAT Fixed-wing Aeroplanes during 2017-2019 (pre-Covid)

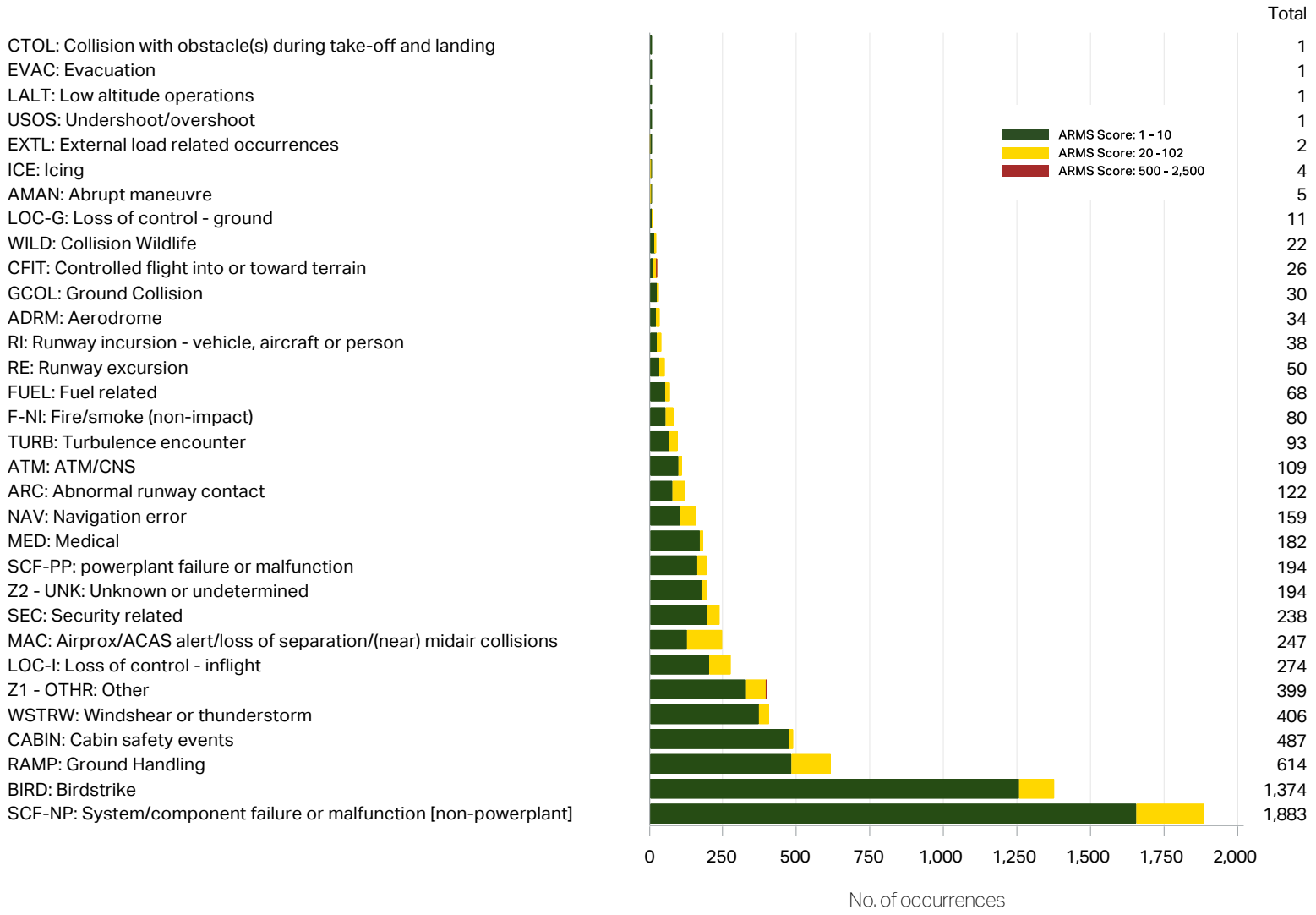


Figure B.2.(b): Categorisation of MORs Involving Irish CAT Aeroplanes during 2020 -2021(during Covid)

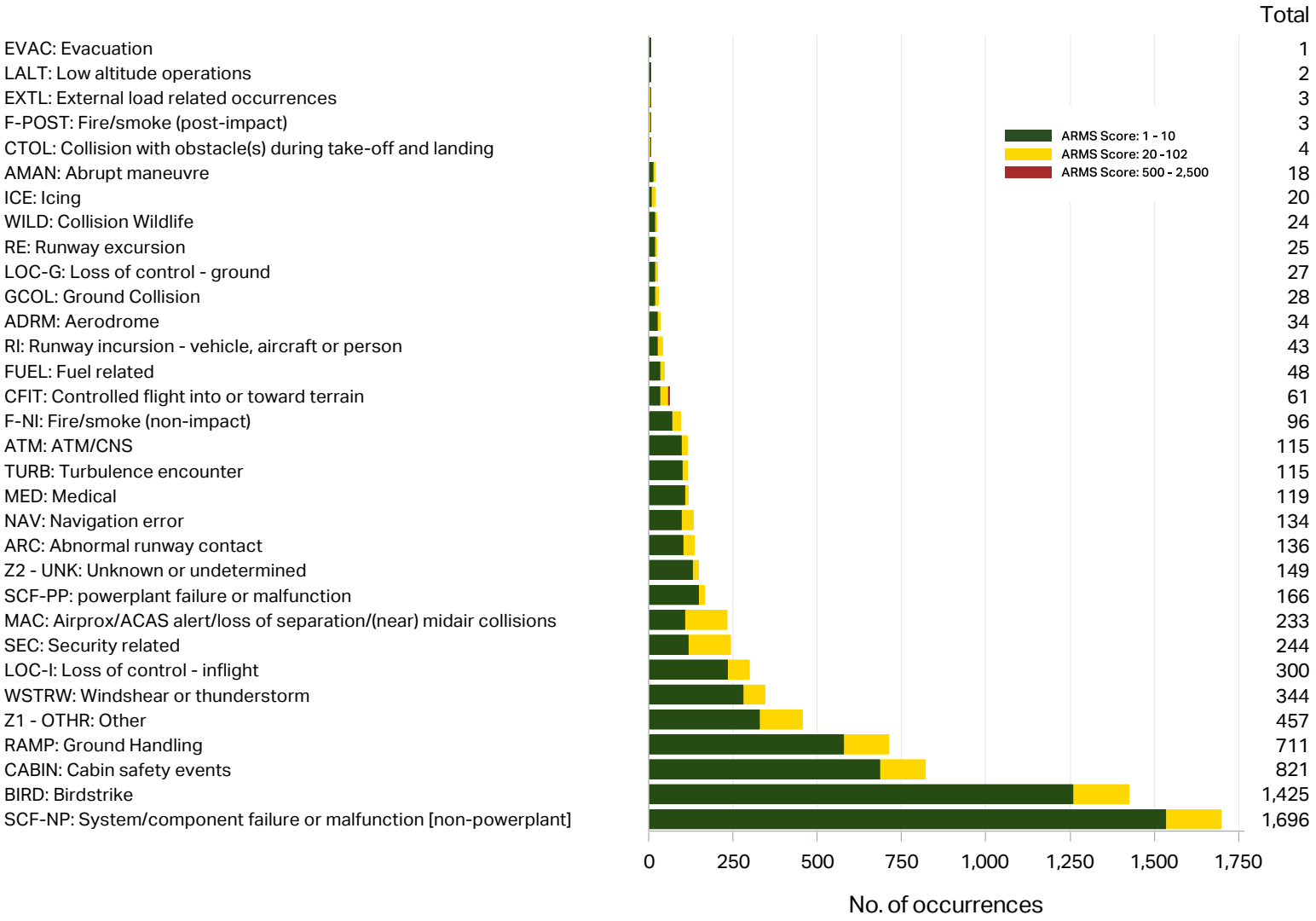


Figure B.2.(c): Categorisation of MORs Involving Irish CAT Aeroplanes during 2022 (post Covid)

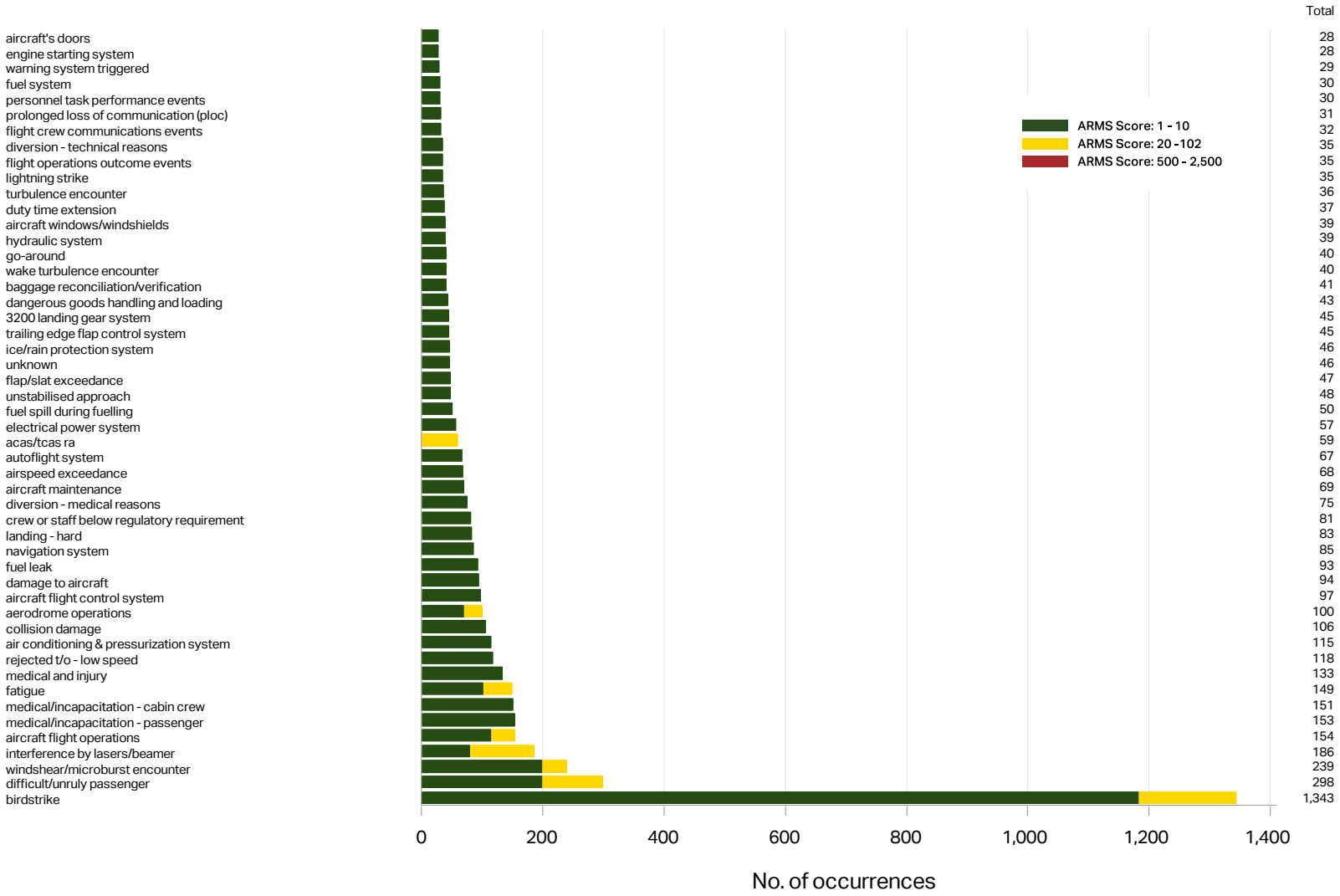


Figure B.3: Top Event Types Involving Irish CAT Fixed-wing Aeroplanes during 2022

Safety Issues

This section provides a summary of the main safety issues that emerge as a result of the analysis of these safety performance statistics for CAT aeroplane operations. The first sub-section focuses on the key safety areas identified across the globe as the main causes of fatalities in aviation, and the second sub-section focuses on the other safety areas where the likelihood of fatalities is low but where high severity occurrences could lead to costly damage to aircraft or major inconvenience to aircraft occupants.

KEY SAFETY AREA	SAFETY ISSUES
Mid-Air Collision (MAC)	• Airborne conflict with non-transponder equipped aircraft (e.g. airspace infringement into controlled airspace or flight by CAT aircraft in un-controlled airspace) • Integration of drone operations into air traffic system
Aircraft Upset (LOC-I/AMAN)	• Monitoring of flight parameters to prevent loss of situational awareness, and/or warning system activation, and/or aircraft upset, and/or unstable approach. • Management of technical failures to prevent aircraft upset • Avoidance of flight into convective weather or icing conditions which could cause aircraft upset • Management of Birdstrike or laser attack to prevent aircraft upset • Recognition and recovery from aircraft upset • Optimum state of wellbeing and fitness for flight
Runway Excursion (RE)	• Management of approach path • Avoidance of flight into convective weather, microbursts or windshear • Management of crosswind landings and unstable approach • Recognition of runway condition for take-off or landing • Reliability of critical equipment (e.g. landing gear, wheels, brakes, thrust revers and spoilers)
Runway Incursion (RI)	• Awareness or response to the unauthorised presence of other aircraft or vehicles on the runway • Deviation from ATC clearances by Flight Crew
Controlled Flight into Terrain (CFIT)	• Implementation of APV approach procedures to replace Non-Precision Approach • Implementation of advanced ATS services in terminal maneuvering area (ref SESAR Solutions Catalogue) • Management and monitoring of altitude setting procedures, awareness of blunder error • Optimum state of wellbeing and fitness for flight

Key Safety Areas:

EASA's Air Ops Risk Review for 2022 states that there were 11 fatal accidents worldwide in CAT operations with large aeroplanes with a maximum take-off mass greater than 5,000 kg. The number of fatal accidents in 2022 was the same as the previous 2 years. There have not been any fatal accidents involving an EASA Member State (MS) operator since 2016. Except for the accident to the Chinese Boeing 737 in March 2022, in which 132 people lost their lives, most of the accidents in 2022 relate to known types. These include hard landings, tail strikes, runway excursions and controlled flight into terrain. Regrettably, 5 accidents involved fatalities on the ground. These included ground staff ingested into an engine, struck by a propeller, injured during pushback, and two collisions on the runway - one with a motorcycle in Guinea and one with a fire truck in Peru. EASA's SIB No 2022-06 on the Risks Emerging During Ramp-up of Aviation Activities recommended that aerodrome operators should increase collaboration with ground handling service providers, air operators, security services providers and State agencies.

ICAO and EASA analysis of aviation safety data on a worldwide basis has identified the following categories: controlled flight into terrain (CFIT), loss of control-inflight (LOC-I), mid-air collision (MAC) and runway incursions (RI) and excursions (RE) as the main contributors to accidents with a high number of fatalities in commercial aeroplane operations. CFIT, MAC and LOC-I accidents often have catastrophic results with very few, if any, survivors. Although statistically very few runway incursions result in collisions, there is a high fatality risk associated with these events. Runway excursions remain predominant in terms of number of occurrences with the majority of runway excursions survivable, however the fatality risk remains significant.

Figure B.1 shows that over the past five years there were no accidents in these occurrence categories involving the Irish AOC holders and Irish lease fleet operators. However, there were 13 serious incidents in the following key safety areas: 8 categorised as MAC, 4 categorised as RI and 1 categorised as RE. MAC was attributed to 3 serious incidents in 2022, all of which occurred outside of the Irish state. Another airprox event involving a late go-around and departing aircraft was categorised as ATM. ICAO Doc 10161 Global Aviation Safety Roadmap recommends safety enhancement initiatives for MAC such as the identification of additional contributing factors, e.g., traffic conditions - traffic density, complexity, mixture of aircraft types and capabilities, etc.

Figures B.2.(a), B.2.(b) and B.2.(C) demonstrate that occurrence reports of precursor events categorised as MAC and LOC-I continued to be similarly placed in the top 10 of the most reported occurrence categories in the three timeframes presented i.e., pre-Covid (2017-2019), during Covid (2020 and 2021) and post Covid (2022). Analysis of these reports firstly shows that the majority were classified as being low risk (green band) and secondly enables the identification of weaknesses and trends in the sector that can be used to inform appropriate mitigations. The CFIT category has proportionally fewer related occurrences and most of these relate to activation of TAWS alerts due to momentary breach of protection envelopes, which demonstrates the effectiveness of this technological mitigation. There are fewer reports from CAT aeroplane operators in the high-risk occurrence categories of RI and RE. In addition to the insight gained from their analysis as a sector they highlight the need to address safety risks from a cross domain perspective, such as flight operations, aerodrome operators and air navigation services provision, in order to maximise the effectiveness of safety barriers.

Figure B.3 provides more insight into the types of events that underlie the occurrence categories for 2022 with Birdstrikes the top event type reported .

Detailed analysis of all these events in conjunction with follow-up information from the reporting organisation has identified the following safety issues that have been tabulated below with their corresponding key safety area.

Other Safety Areas:

The following table summarises other safety areas outside of the key risk areas discussed above.

SAFETY AREA	SAFETY ISSUES
Ground Operations	• Adherence to aircraft loading procedures (e.g. passengers, baggage and cargo, fuel) and accurate calculation of mass and balance • Adherence to aircraft ground handling procedures (incl. towing, de-icing, refueling etc.) • Reporting of damage to aircraft during ground operations • Oversight of ground operations subcontracted activities
FIRE	• Lithium batteries or other material presenting a fire hazard in cargo or cabin baggage • Placing of intended passenger carry-on baggage in the aircraft hold at the departure gate
CABIN/MED	• Management of difficult/unruly passengers

The key safety areas discussed above address the main causes of fatalities in CAT operations, however there are other areas worthy of consideration, while they do not generally contribute to fatal accidents, they can sometimes be associated with serious injury to persons or damage to aircraft. The areas of focus in this review are ground operations, fire, cabin safety and medical emergency.

Ramp: ground handing was ascribed to 7 accidents and 3 serious incidents over the past five years up to and including 2022. This represents an increase when compared to the five years up to and including 2021 when the categorisation was applied to 3 accidents and 1 serious incident, see Figure B.1. However, this may in part be accounted for by the rapid return to new normal operations throughout 2022. Due to the nature of their operation i.e., slow speed whilst moving on the ramp or taxiway, the most credible accident outcome in this domain is less catastrophic than other categories such as mid-air collisions. However, there is still a potential risk of some casualties, the loss of revenue due to damaged aircraft and passenger anxiety due to delayed flights. Undetected errors in aircraft loading and non-reporting of aircraft damage by ground vehicles present a higher level of threat as they could lead to further difficulties for the operation of the flight once the aircraft becomes airborne.

There was a reduction of fire/smoke/fumes related serious incidents from 4 over the five years between 2016-2020 to 2 over the five years between 2018-2022, all of which were resolved satisfactorily by the crews. Again, this may be reflective of the lower level of operations. On-board fire is an event that must be dealt with promptly and effectively, using aircraft design and operational procedures to prevent a fire from starting in the first instance or from escalating to a loss of control of the aircraft. The unique fire hazard characteristics of lithium-ion batteries and their proliferation in commonly used electronic devices pose a significant safety risk that must be effectively mitigated and managed.

Figure B.1 illustrates that there were 3 serious incidents categorised as medical emergency between 2018-2022. A comparison between Figures B.2.(a) (b) and (c) highlights that MED (Medical) dropped from the 3rd most reported occurrence category pre-Covid (2017-2019) to 12th in 2020-2021 and 14th in 2022. CABIN (Cabin Safety) reports were the most reported occurrence category pre-Covid (2017-2019), dropping to 4th most common during Covid (2020-2021) and 3rd most common in 2022. RAMP (Ground Handling) continued to be a significantly reported category similarly placed across all three timeframes. Difficult/unruly passengers has come to the fore in 2022 being the 2nd most reported event category, compared to pre-Covid when it was the 7th most reported event type (see

ASPR for 2020). The conspicuous emergence of this issue on the ramp up of operations post Covid has been observed by other member states and EASA, culminating in the EASA hosting a Ready to Fly - Unruly Passenger Campaign 2023 in June 2023.

While the number of MORs received from operators of the 'Irish lease fleet' increased significantly in 2022 compared to 2021, the numbers do not support the identification of any emerging trends for 2022. The increase was likely commensurate to the post Covid return to operations; however, 119 commercial land aeroplanes were in storage at the end of 2022. The main categories reported were similar to those observed in the CAT Aeroplanes domain, with 'Significant component failure – non-powerplant' (SCF-NP) being the most common. As the State of Registry these were addressed by the Airworthiness Standards Department (AWSD) inspectorate with operational issues being referred to the State of Operation in accordance with the ICAO Article 83 bis agreement. All were scored as being low risk bearing. In the main, the same key safety areas and safety issues previously outlined remain applicable to these operations in the long term.

Occurrence reporting rates

CAT activity increased a significant 96% in 2022 compared to 2021, but this was still down 51% on 2019. The occurrence reporting rate during the two Covid-19 years (2020-2021) was higher than in the preceding three years. This stronger reporting rate was maintained post covid in 2022 as demonstrated in table B.2, which provides data on the number of sectors flown annually between 2017 and 2022 along with the corresponding MOR rates.

Table B.2: Statistics on MORs submitted by the Irish AOC holders who operate aeroplanes (MOR rates were calculated per 10,000 flights)

Year	Sectors Flown	Total	
		Number	Rate
2017	1,018,688	6,806	66.81
2018	1,096,104	8,614	78.59
2019	1,068,939	9,938	92.97
2020	305,513	3,320	108.67
2021	313,572	4,017	128.10
2022	614,899	7,532	122.49
Total/average	4,417,715	40,227	99.60

Part NCC

NCC declarations increased in 2022, consisting mainly of ferry flights and maintenance check flights. The current level of NCC activity does not support insightful independent statistical analysis. EASA's ASR 2022, the latest publication available currently states that, 'during 2021, for the second year in a row there were no accidents involving an EASA MS registered NCC business aeroplane. They also note that there is a low number of lower risk occurrences and that this is likely due to the low reporting in the NCC domain, where only high-risk accidents and serious incidents, normally very visible and with severe outcomes, are reported and thus able to be investigated. The IAA continues to work with organisations to advocate for improvement in the reporting culture to improve safety management processes in this sector.

SECTION C

THE IRISH COMMERCIAL HELICOPTER SECTOR



Introduction

This section addresses the commercial helicopter services sector in Ireland, which is a relatively small sector in comparison to the fixed-wing CAT operations domain. It includes helicopter commercial air transport (CAT) operators, helicopter commercial specialised operators (SPO) and operations of non-commercial air operations with complex motor-powered helicopters (NCC).

Ireland had 3 helicopter Air Operator Certificate (AOC) holders operating 12 helicopters in commercial air transport (CAT) during 2022. One operator is approved to undertake helicopter emergency services (HEMS) and search and rescue operations (SAR).

Commercial SPO flights, such as surveying or photography, require that a helicopter operator declare its capabilities to the Irish Aviation Authority. Two of the above helicopter operators have also declared their capabilities to undertake commercial SPO activities operating 10 of the above helicopters in the SPO role.

To undertake non-commercial air operations with complex motor-powered helicopter (NCC) flights a helicopter operator must declare its capabilities to the Irish Aviation Authority. Two operators have declared their capabilities to undertake NCC activities operating 1 foreign registered and 2 Irish registered helicopters.

The Irish helicopter lease fleet are included here with the Irish CAT helicopter operators, as they are exposed to the same risks even though their approval and oversight regime differs. During 2022, 9 Irish registered helicopters operated under the provisions of Article 83 bis of the Chicago Convention on foreign issued AOCs.

Overall, the influence exerted by the pandemic on the Irish commercial helicopter sector was not as impactful as in the case of the fixed wing CAT sector due to the essential nature of the majority of Irish commercial helicopter operations such as SAR and HEMS. In 2022 the effects of the pandemic waned after the first quarter as the Omicron variant failed to materialise compared to previous variants. Within this sector, Search and Rescue (SAR), HEMS and SPO services saw a slight increase in sectors flown in 2022 versus 2021.

Accidents and serious incidents

Over the last five years helicopter operators in this sector were involved in 1 non-fatal accident which occurred in 2022. There were no fatal accidents or serious incidents during this time. Table C.1 below provides the details.

Table C.1: **No. of accidents, fatal accidents and serious incidents involving helicopters engaged in CAT, Part-NCC and Part-SPO operations.**

YEAR	NO. ON IRISH AIRCRAFT REGISTER	ACCIDENTS			SERIOUS INCIDENTS
		NON-FATAL	FATAL	TOTAL	
2018	16	0	0	0	0
2019	20	0	0	0	0
2020	20	0	0	0	0
2021	19	0	0	0	0
2022	22	1	0	1	0
Total	-	1	0	1	0

Occurrences

The IAA categorises helicopter occurrences using the same common taxonomy as discussed in Section B. A breakdown of the top occurrences submitted by Irish Helicopter AOC holders and NCC/SPO declared operators, according to occurrence category and ARMS Risk Classification Band is presented in Figure C.1 below for 2017 - 2019. Similar datasets have been produced separately for 2020 and 2021 in Figure C.2 and 2022 in Figure C.3, to enable a comparison of the pattern of predominant occurrence categories between the pre-covid years (2017-2019) versus the Covid years (2020-2021) and post-Covid (2022).

The top reported categories pre-Covid (2017-2019), during Covid (2020-2021) and post-Covid largely remained the same with "SCF (system component failure or malfunction)", and "Other" being the most common. All the SCF occurrences in 2020-2021 and 2022 were low risk which indicates minor failures or failure of redundant systems that had little effect on operations.

Many of these operations are undertaken in harsh environments which can affect on-board systems. The categorisation of "Other" has decreased over the years which may indicate better application of the ADREP taxonomy in the helicopter domain. However, the usage of category "Other" in the helicopter domain may be necessary when the ADREP taxonomy does not fully account for helicopter low level SPO operations. Occurrences categorised as "other" include for example, failure of Part SPO role equipment and accuracy of aeronautical charts. There were no appreciable trends in occurrence categories in 2022 as compared with the years prior to Covid (2017-2019) which saw Navigation errors (NAV) and Security issues (SEC) more commonly reported.

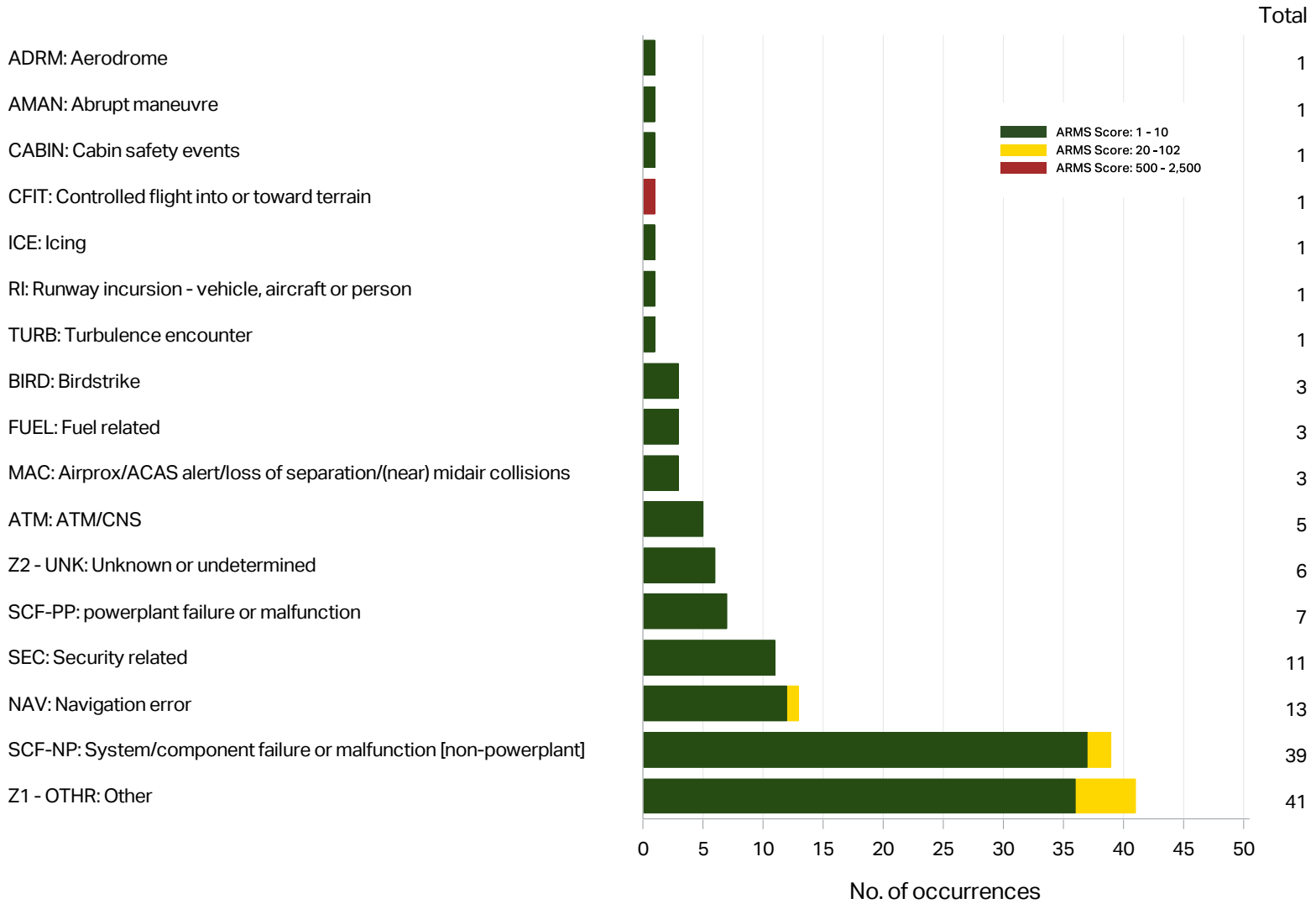


Figure C.1: Categorisation of MORs Commercial and Declared Helicopter Operation 2017-2019 (pre-Covid)

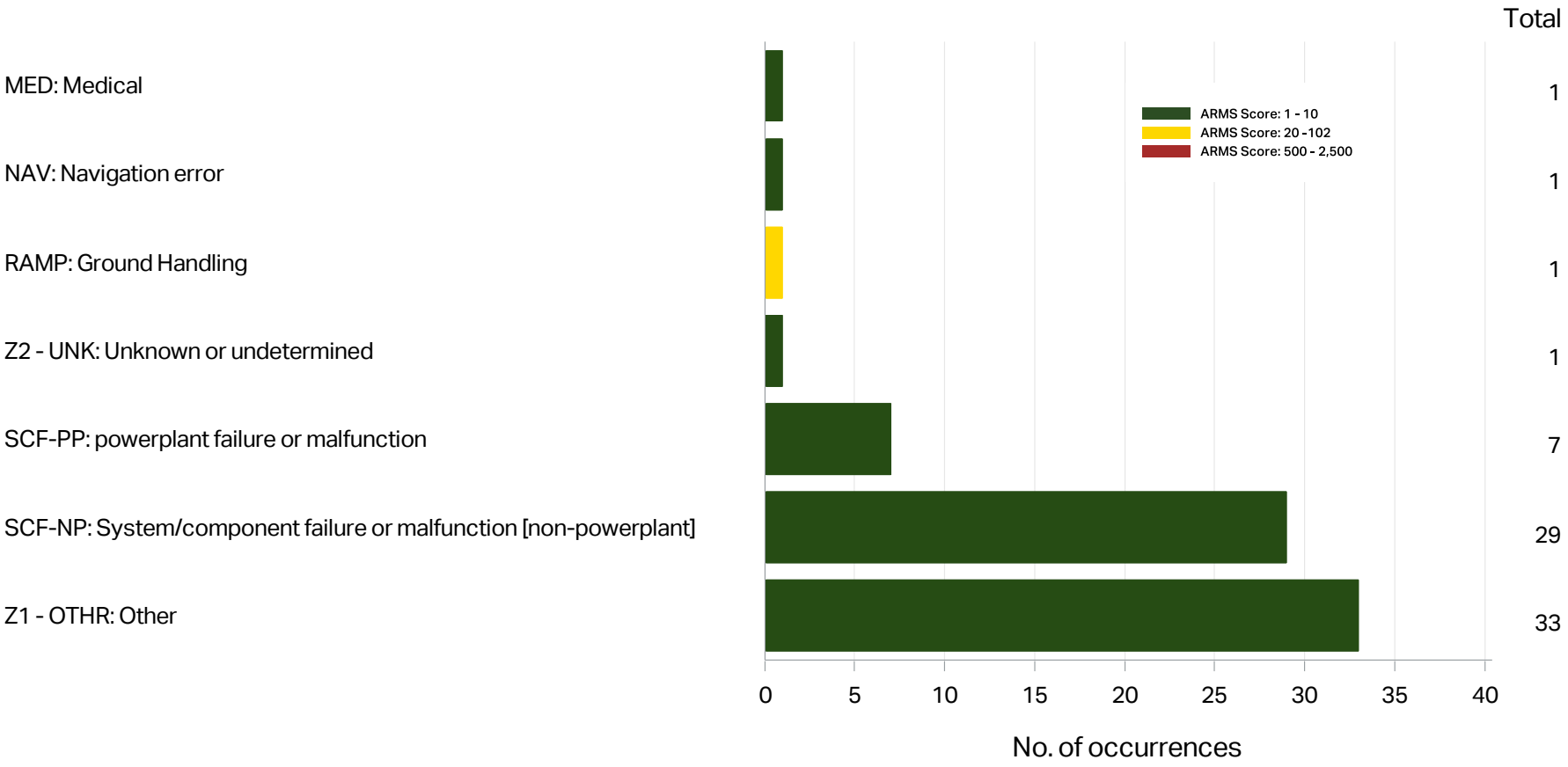


Figure C.2: Categorisation of MORs Commercial and Declared Helicopter Operation 2020-2021(during Covid)

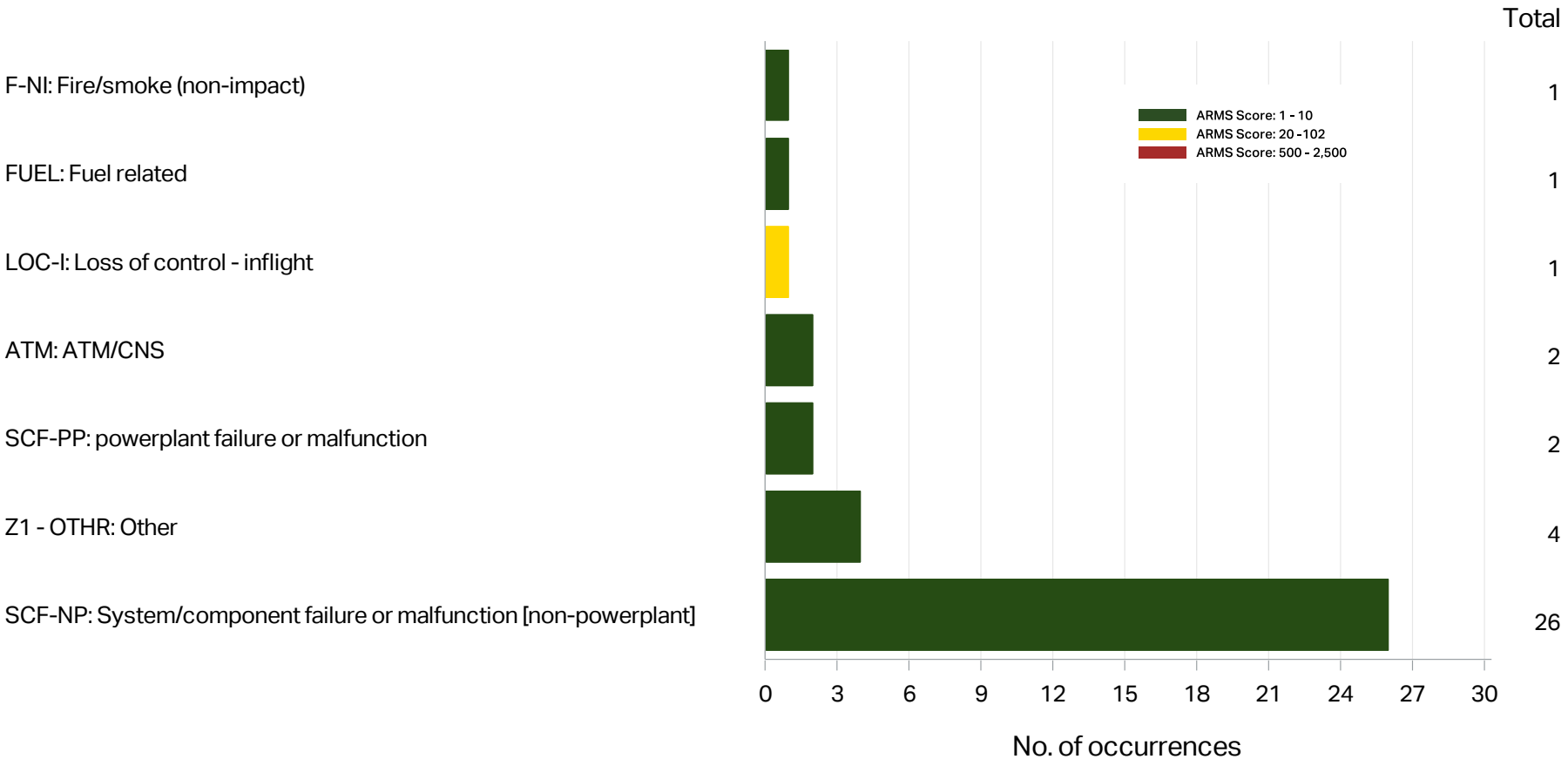


Figure C.3: Categorisation of MORs Commercial and Declared Helicopter Operation 2022 (post Covid)

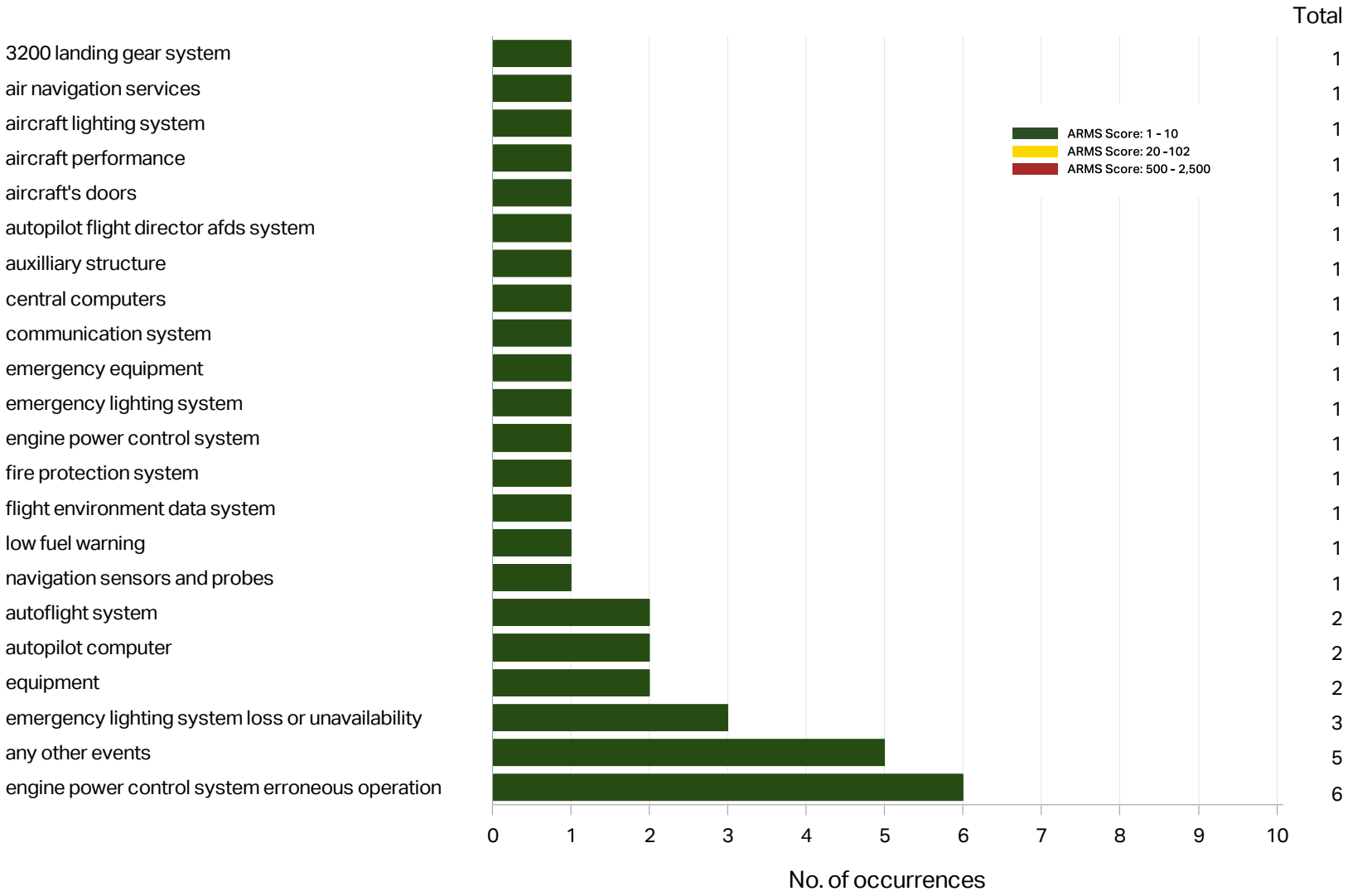


Figure D: Top Event Types – Commercial and Declared Helicopter Operations 2022

Safety Issues

This section provides a summary of the main safety issues that emerge as a result of the analysis of these safety performance statistics for commercial and declared helicopter operations. This first sub-section focuses on the key safety areas identified across Europe as the main causes of fatalities in helicopter operations, and the second sub-section focuses on the other safety areas where the likelihood of fatalities is low but where high severity occurrences could lead to injuries to occupants and damage to helicopters.

Key Safety Areas:

Detailed analysis of helicopter events in conjunction with follow-up information from the reporting organisations has identified the following safety issues that are included in the sector-based risk register.

KEY SAFETY AREA	SAFETY ISSUES
Aircraft upset (e.g. LOC-I, AMAN)	• Monitoring of flight parameters to prevent loss of situational awareness, and/or warning system activation, and/or aircraft upset. • Management of flight path • Management of technical failures to prevent aircraft upset • Avoidance of flight into convective weather or icing conditions which could cause aircraft upset • Reaction to birdstrike or laser attack to prevent aircraft upset • Recognition and recovery from aircraft upset • Optimum state of wellbeing and fitness for flight
Collision with terrain or obstacle (e.g. CFIT, CTOL, LALT)	• Intentional low-level operations • Operations in degraded visual environments • Maintenance of situational awareness by crews • Use of helicopter see and avoid • Use of take-off and landing sites outside of airports/heliports • Accuracy and appropriate use of aeronautical charts and terrain and obstacle databases • Use of company routes • Adequacy of TAWS database for low level helicopter operations • Adequacy of cockpit lighting for the required operational conditions • Increased number of Windfarms • Optimum state of wellbeing and fitness for flight
Mid-Air Collision (MAC)	• Potential conflict with non-transponder equipped general aviation aircraft • Potential conflict with drones

Due to the relatively low activity level of commercial and declared operations in Ireland and consequently the relatively low levels of safety occurrences reported, it is challenging to identify the key risk areas from the analysis of the Irish safety information alone. However, the analysis performed by EASA of the safety performance of this sector across the EU (including Ireland) can support the IAA efforts in this regard. EASA has identified the key risk areas based on analysis of helicopter accidents and serious incidents in this sector across Europe as aircraft upset/loss of control, obstacle collision in flight, airborne collision and CFIT.

Figure D gives more insight into the events that led to the occurrence reports in 2022 and although the specific circumstances of these reports did not lead these events to be categorised in the key risk areas they could in other circumstances or in combination with other events, contribute to an aircraft upset or collision with terrain or obstacles (e.g., critical equipment failures, aeronautical chart errors, birdstrike, laser attack).

Over the past five years there was 1 non-fatal accident which occurred in 2022 which was classified as loss of control-inflight (LOC-I). This incident is also noted in Figure C.3 which shows that there was 1 risk bearing occurrence (loss of control-inflight (LOC-I) in 2022.

The risk of mid-air collision is another safety area for helicopter operators, notwithstanding the fact that there are very few reports from this sector concerning this risk area. There were 3 low risk reports pre-Covid (2017-2019), none during Covid (2020-2021) or post Covid (2022). Many helicopter operations occur outside of controlled airspace where a wide variety of general aviation aircraft freely operate, and many of these aircraft are not equipped (nor required to be equipped) with transponder equipment. Therefore, helicopter must rely on flight planning, situational awareness and see and avoid procedures to avoid airborne conflict. There is also the new threat of drone operations to consider, especially important for low level helicopter operations.

Other Safety Areas:

The highest number of reports submitted by this sector concern system component failure. Most of these events were classified as low risk which means that the failures had little impact on the safe operation of the aircraft (e.g. due to built-in system redundancy). By its very nature, helicopter operations present a challenging environment for aircraft equipment, and EASA as competent authority for aircraft design in Europe, has identified a number of mitigating actions to address the main safety concerns arising from helicopter equipment failures in the European Plan for Aviation Safety. (Refer to https://European Plan for Aviation Safety (EPAS) 2023-2025 | EASA (europa.eu) for more details)

The other categories reported in 2022 were Fire/smoke non-impact (F-NI) and Fuel with 1 report each and ATM with 2 reports. These low numbers are not ample to indicate a trend, but it would be prudent to continue monitoring these areas in future years for any discernible trends.

The EPAS (2023-2025) Vol III presents an elevated priority index for Rotorcraft which includes Inadequate obstacle clearance during low-altitude operation, take-off and landing (SI-8031), Poor pre-flight planning and preparation (SI-8017) and Helicopter-maintenance-related-issues (SI-8005). In addition, the 2022 Annual Safety Review states that the Agency is currently taking action to address the recurrent challenge of evaluating the level of helicopter flying activity in Europe within a specific stream of the rotorcraft safety roadmap. The ASR also notes that 52% of all accidents and serious incidents involved certified helicopters performing non-commercial operations and for which an EASA MS was either the state of operator or state of registry and 27% of all accidents and serious incidents involved certified helicopters performing specialised operations and for which an EASA MS was either the state of operator or state of registry.

The IAA works with Helicopter operators through oversight activities (e.g. SMS oversight) and safety promotion to ensure these safety issues are being addressed by helicopter operators, as appropriate to them. Refer also to the latest edition of the IAA State Plan for Aviation Safety, https://www.iaa.ie/safety/state-safety-plan.

Number and rate of MORs

The following table provides data on the number of sectors flown annually over the last six years with the corresponding MOR rates per 1,000 flights. The number of movements decreased by 14% in 2022 compared to 2021, partly due to the cessation of one of the Irish Helicopter AOCs in summer 2021. Overall, the Covid period (2020-2021) reporting rate is slightly lower at 4.83 when compared to the pre-Covid (2017-2019) reporting rate of 6.04 and the post-Covid (2022) reporting rate of 5.93. The reporting rate for 2022 shows some recovery towards pre-Covid reporting levels.

Table C.2: **Statistics for MORs submitted by the Irish AOC holders operating helicopters (MOR rates were calculated per 1,000 flights)**

Year	Sectors Flown	Total	
		Number	Rate
2017	6,887	35	5.08
2018	7,206	40	5.55
2019	8,144	61	7.49
2020	9,176	34	3.71
2021	7,236	37	5.11
2022	6,236	37	5.93
Total/average	44,885	244	5.48



SECTION D

AIR NAVIGATION SERVICES AND AERODROMES IN IRELAND

Introduction

Aerodromes within Ireland which are open to public use, serve commercial air transport and have a paved runway of 800m or more or exclusively serve helicopters with instrument procedures, are certified by the IAA in accordance with EU Regulation No. 139 of 2014. These are known as certified aerodromes.

Under national aviation law, those aerodromes which are not within the scope of the European regulation require licensing if take-off or landing by aircraft carrying passengers or goods for hire or reward is being undertaken. These are known as nationally licensed – public use aerodromes.

Additionally, under national aviation law, where instruction in flying is being undertaken, there is a requirement under S.I. 355 of 2008 – Aerodromes and Visual Ground Aids Order for the aerodrome to be licensed. These are known as nationally licensed – private use aerodromes. In limited circumstances, an unlicensed aerodrome may be prescribed as suitable by the Authority dependent on the complexity of infrastructure and volume of instruction in flying activity taking place. A declaration can be made to the Authority to allow for the use of such an unlicensed aerodrome for instruction in flying.

During 2022, there were 8 certified aerodromes within Ireland, 5 nationally licensed public use aerodromes and 9 nationally licensed private use aerodromes. Details of the current certificated and licensed aerodromes are published in AIP Ireland, AD Section 1.5 – Status of Certification of Aerodromes. There were 5 unlicensed aerodromes where such a declaration is in place.

The influence exerted by the covid pandemic on the Air Navigation and Aerodrome sector gradually waned through 2022 as traffic levels steadily recovered month by month to near 2019 levels by year end. The level of ATC controlled flight hours in 2022 was up 86% on 2021 but remained 9.9% lower than the level of activity recorded in 2019. This included traffic overflying Irish airspace as well as aircraft that land or depart from an Irish airport (terminal traffic). Similarly, the number of flights at Irish airports in 2022 increased a significant 123% on 2020 levels but was still 12% down on the level of activity observed in 2019.

A flight in this instance refers to an aircraft movement be it a landing or a departure at an Irish aerodrome.

The unexpected Russian invasion of Ukraine in February 2022 caused unavailability of airspace and impacted traffic flows throughout Europe. Later in the year the speed of the summer recovery saw staff and capacity shortages across the Air Traffic sector which resulted in delays and punctuality across the European network which were worse than in 2019. Unanticipated staffing and capacity shortages at airlines, airports and ground handlers brought about cancellations, substantial delays and uncertainty for passengers transiting major airports.

Accidents and Serious Incidents

This section discusses flight hours, departures, accidents and serious incidents involving aircraft engaged in Commercial Air Transport (CAT) at certified and licenced aerodromes in Ireland where there is an ATC service available. Those aerodromes are Dublin, Cork, Shannon, Ireland West, Kerry, Donegal, Sligo, Waterford and Weston. The aircraft involved may be registered in Ireland or abroad and hold an AOC issued by the IAA or a foreign NAA. Accidents and serious incidents involving aircraft engaged in General Aviation (GA) are not included in this section (refer to Section E below), unless there was a second aircraft involved in the same occurrence that was providing commercial services.

There were 4 non-fatal accidents and 5 serious incidents over the five-year period between 2018 and 2022 inclusive. In 2022 there was 1 non-fatal accident categorised as loss of control-inflight (LOC-I) and 1 serious incident categorised as medical (MED).

Table D.1: Non-fatal accidents and serious incidents involving CAT at Irish certificated and licenced aerodromes which provide ATC services

YEAR	2018	2019	2020	2021	2022	TOTAL
No. flights at Irish airports	293,961	301,124	114,483	118,861	264,924	1,093,353
No. flight hours in Irish airspace	315,776	319,775	131,296	154,877	288,262	1,209,986
Non-fatal accidents	1	0	1	1	1	4
Serious incidents	2	1	0	1	1	5

Based on the findings of their investigation the AAIU assigns a CAST/ICAO common taxonomy category (sometimes more than one taxonomy may be assigned). Figure D.1 summarises the categories assigned to these 4 accidents and 5 serious incidents that took place between 2018 and 2022.



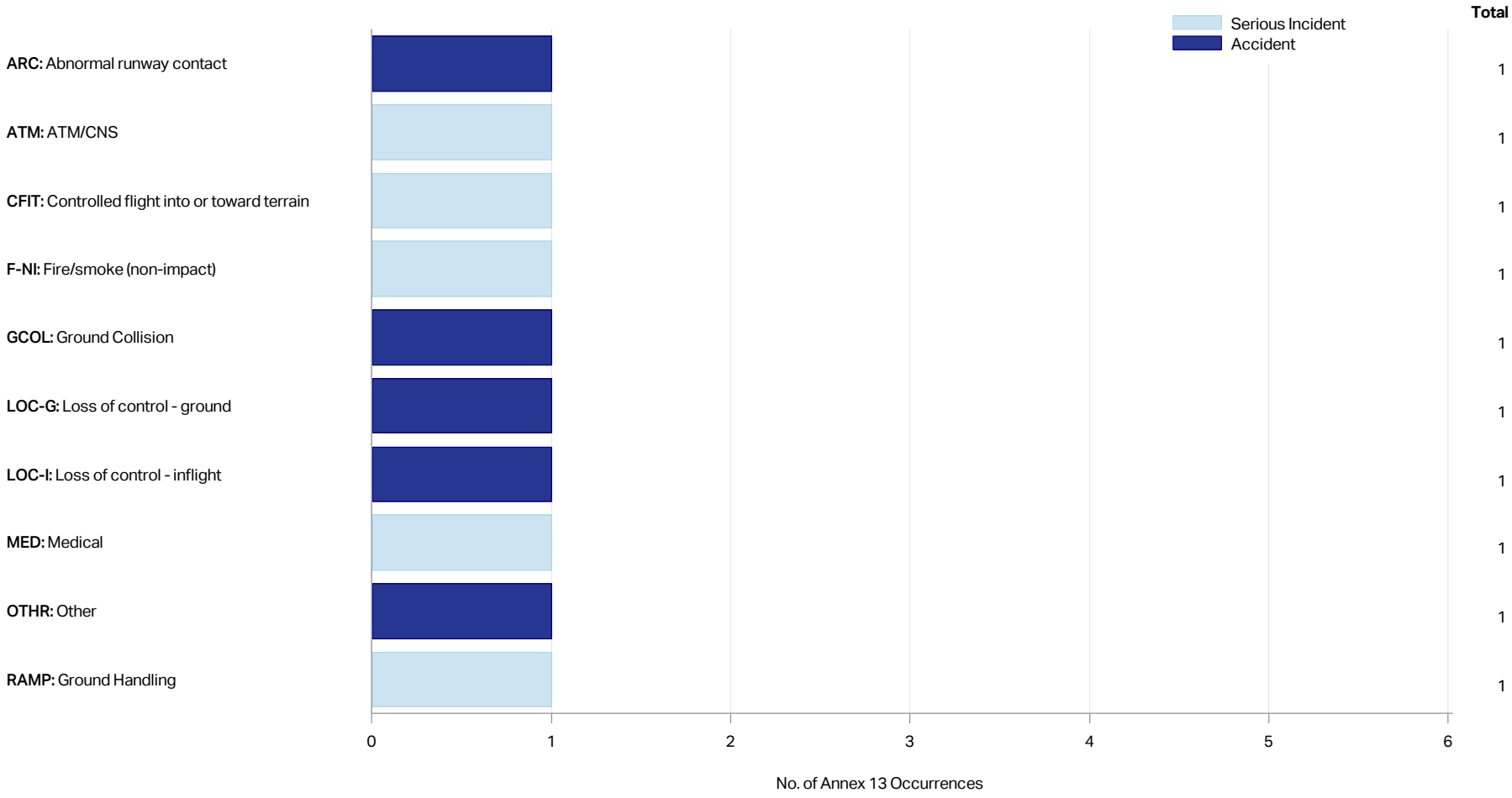


Figure D.1: Categorisations of Annex 13 occurrences involving CAT that occurred at Irish certificated/licenced aerodromes that provide ATC services

Occurrence Reports

This section is divided into two functional sub-sections, the first presents an overview of occurrences reported by air navigation services providers and the second sub-section presents a synopsis of occurrences reported by aerodrome operators. Given the coexistent nature of their service provision a significant number of occurrences at an aerodrome may be reported by both the air navigation services provider and the aerodrome operator. However, it is important to that these occurrences are reviewed and assessed independently as the risk severity and mitigation strategies may differ in the different domains.

Sub-section 1: Air Navigation Service Provision

The IAA receives occurrence reports from ANS providers that occur in Irish airspace, including enroute operations, terminal operations and ground operations where ATC services are provided. Figure D.2.(a) below provides a breakdown of the occurrences submitted pre-covid (2017-2019) by occurrence category along with the ARMS Risk Classification Band. Figure D.2.(b) presents the same data for the covid years (2020-2021) while Figure D.2.(c) shows the data for 2022. This facilitates a comparison of the predominant occurrence categories between the pre-covid years (2017-2019) versus the Covid years (2020-2021) and post-Covid (2022). Figure D.3 provides a breakdown of the top event types reported during 2022 that underlie these occurrence categories and in some instances are precursor events to the more high-profile occurrence categories.

The most reported occurrence categories across the three timeframes i.e., pre-Covid (2017-2019), during Covid and post Covid (2022) largely remained unchanged. These top categories included ATM occurrences (e.g., aircraft separation issues, aircraft go around, ATM equipment problems etc) and Navigation error (e.g., taxiway errors, level bust, ATC clearance issues).

SEC Security related (SEC) was the 7th most reported category pre-Covid, becoming the 5th most reported category during Covid and the 3rd most reported category post Covid. Interference with aircraft was an event type that significantly contributed to this category, it includes interference by disruptive passengers and laser attacks.

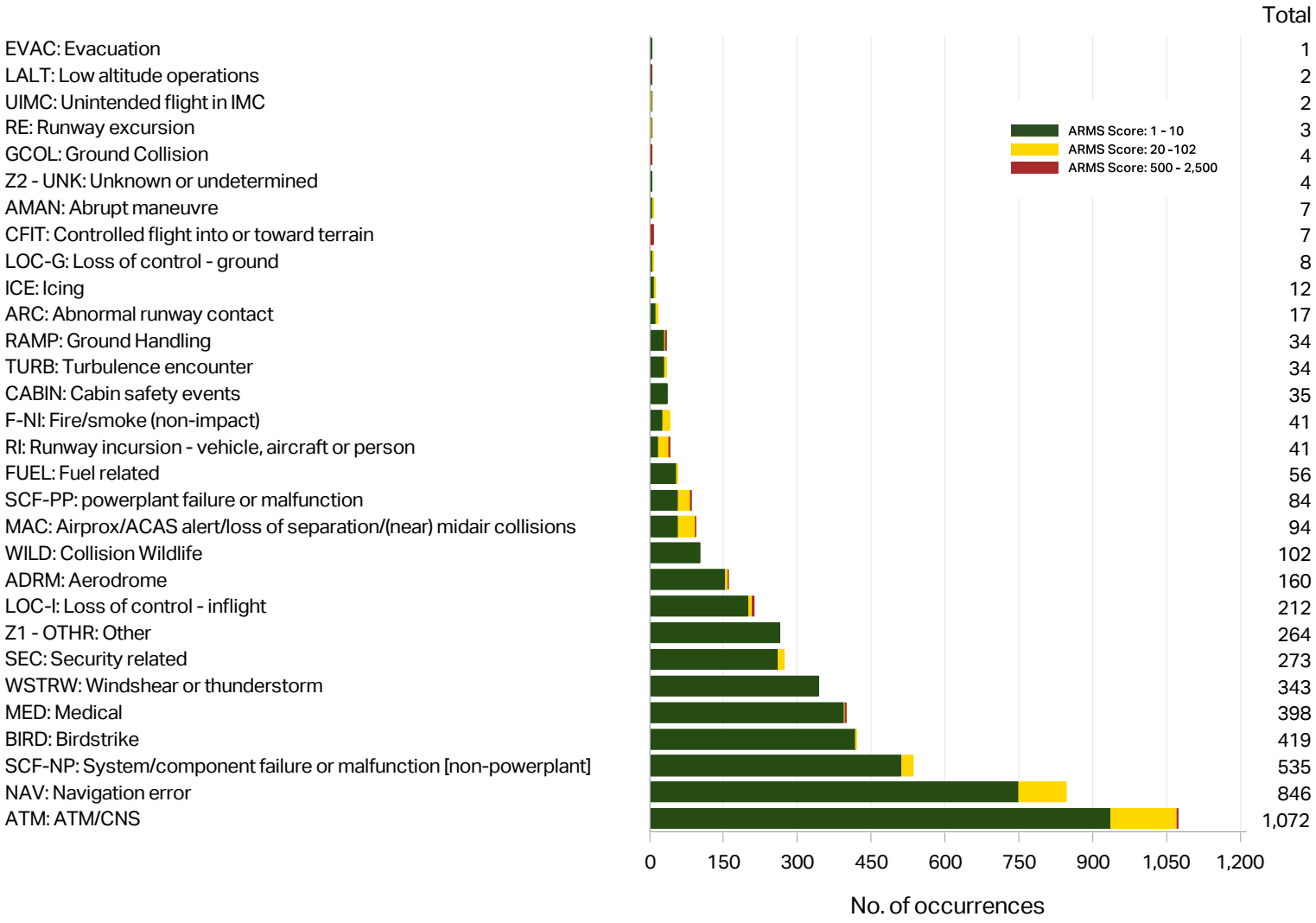


Figure D.2(a): ATC Occurrence Reports pre-Covid (2017–2019)

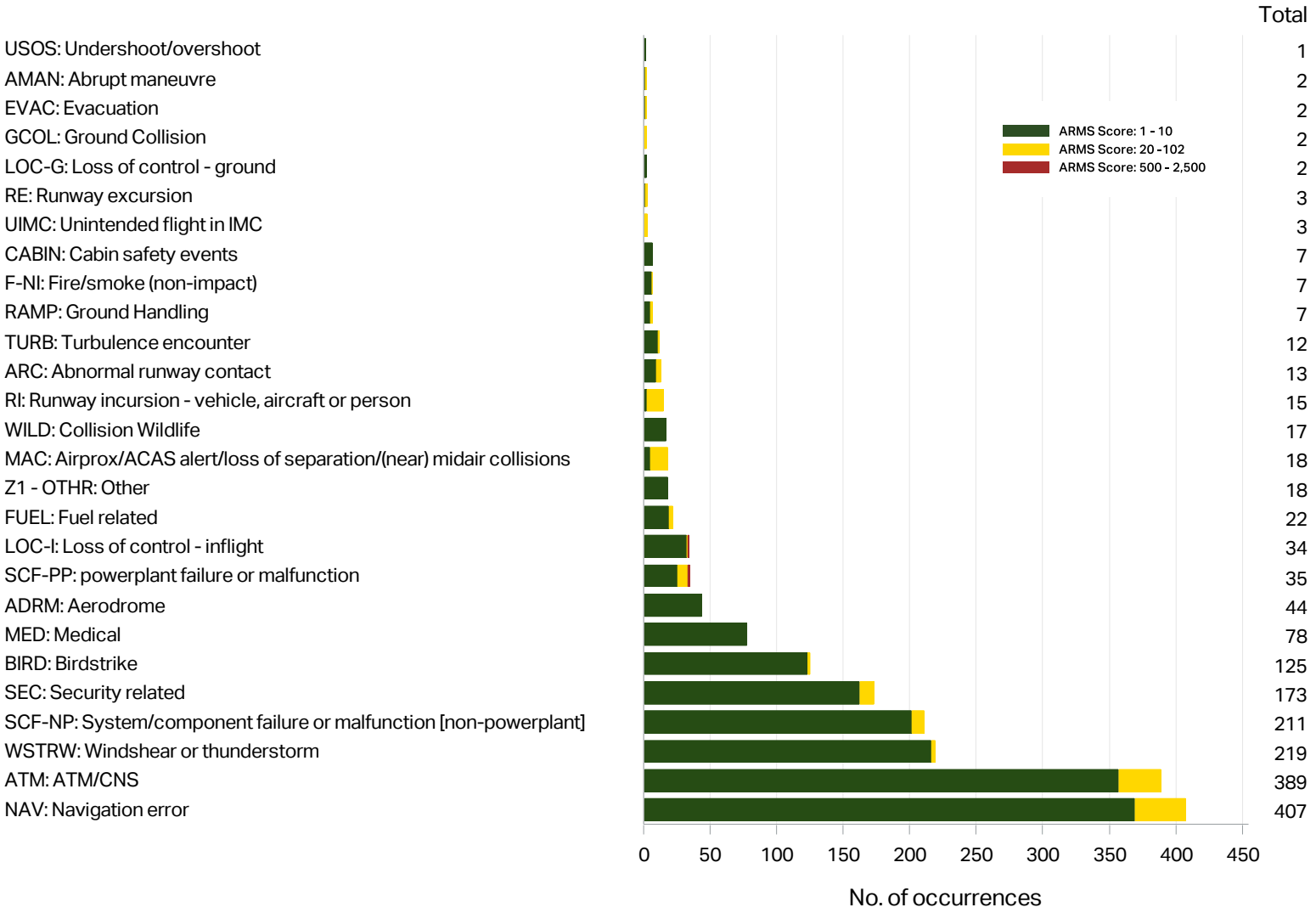


Figure D.2.(b): ATC Occurrence Reports during Covid (2020-2021)

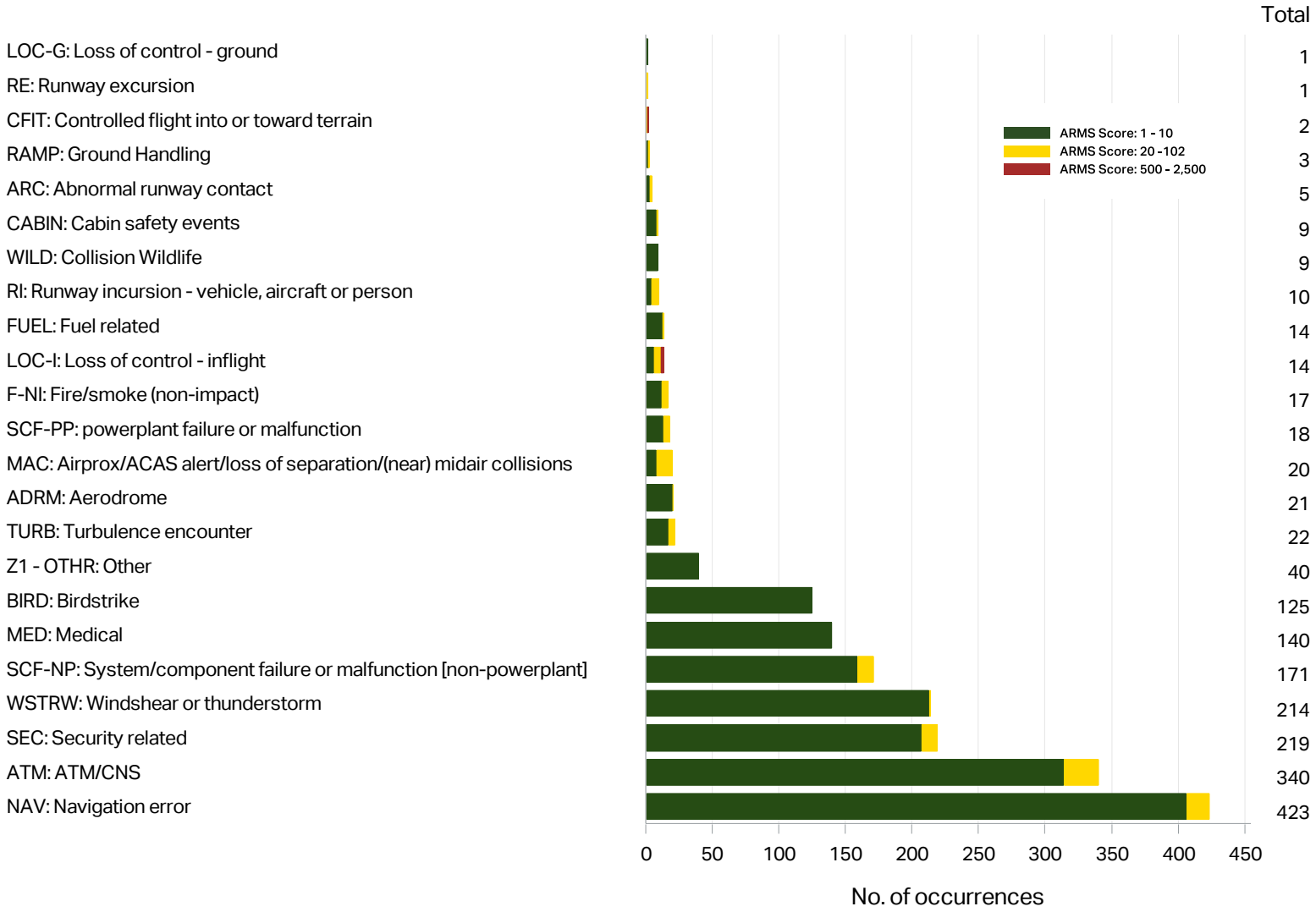


Figure D.2.(c): ATC Occurrence Reports post Covid (2022)

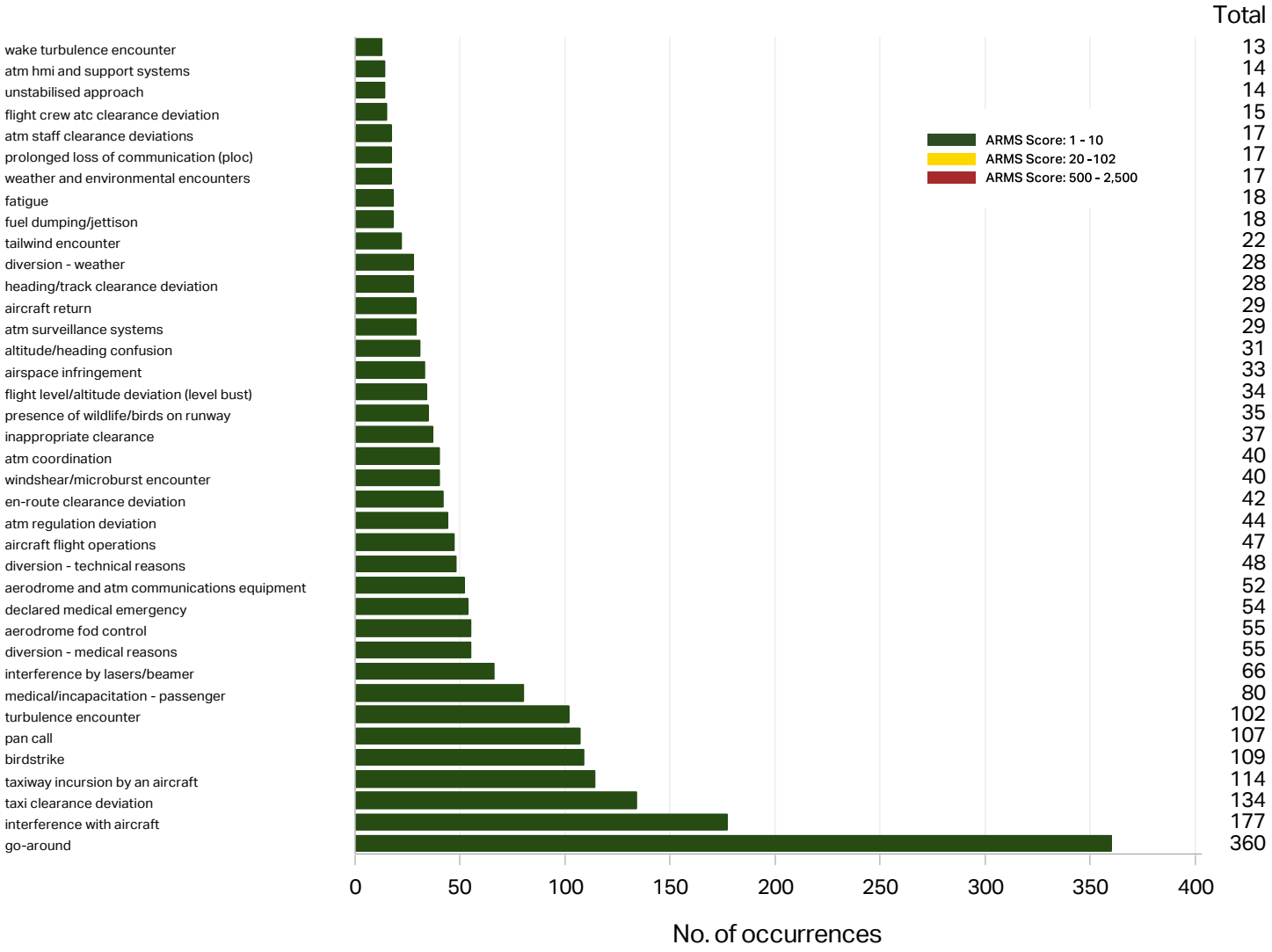


Figure D.3: Top Event Types – ATC 2022

As required by Implementing Regulation (EU) 2017/373, the competent authority (CA) monitors and assesses the safety performance of ATM/ANS service providers under its oversight. Safety performance is monitored through the following set of safety performance indicators (SPIs)

SPI-1; SMI - Separation Minima Infringement

SPI-2; RI - Runway Incursion

SPI-3; AD - Aircraft Deviation from Clearance, Procedures or Regulation

Sub-categorised as:

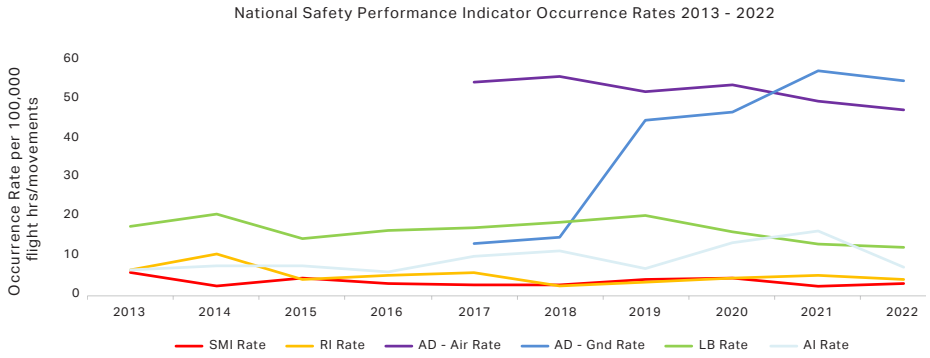
- **AD - Air (Airborne Deviation)**
- **AD - Gnd (Ground-based Deviation)**

SPI-4; LB - Level Bust

SPI-5; AI - Airspace Infringement

Nationally, SPIs are measured as a rate per 100,000 flight hours for airborne occurrences. Ground-based aircraft deviations (AD-Gnd) and runway incursions (RI) are measured as a rate per 100,000 movements.

Table D.2: ATM Annual National SPI Rates, 2013 – 2022



Separation minima infringements (SMI) and runway incursions (RI) are considered to be the two most significant SPIs, as they are inherently closer to the accident scenario than the other SPI categories of, aircraft deviations, level busts and airspace infringements which can sometimes be precursors to SMI and RI.

Since 2013, the rates of SMI and RI have continuously remained at 10 or less per 100,000 flight hours and movement respectively.

In 2017, SPI-3: 'aircraft deviations' was sub categorised into 'airborne deviations' and 'ground-based deviations' to facilitate more relevant measurement of these occurrences (i.e. against flight hours for airborne deviations, and against movements for ground-based deviations).

In 2018, the annual rate of ground-based deviations (AD-Gnd) significantly increased and remains high. The annual rate of airborne deviations (AD-Air) has remained stable between 48 and 56 per 100,000 flights hours since 2017.

In 2022, Level Busts (LB) stands at its lowest annual rate since 2013.

In 2022, the annual rate of Airspace Infringements (AI) has decreased to 7 per 100,000 flights hours, from a ten year high rate of 17 in 2021.

Safety Issues – Air Navigation Service Provision

This section provides a summary of the main safety issues that emerge as a result of the analysis of these safety performance statistics for air navigation service provision.

KEY SAFETY AREA	SAFETY ISSUES
Mid-Air Collision (MAC)	• Identification and response to airspace infringement • Control of traffic flow to prevent separation minima infringement • Recognition and response to deviation from ATC clearance • Adherence to standard phraseology in ATC communications • Adherence to ATC communication procedures (e.g. readback/hearback) • Management of declared emergencies • Anticipation and response to aircraft go-around • Reaction to drone infringements into controlled airspace
Runway Incursion (RI)	• Recognition and response to deviation from ATC clearance by aircraft and ground vehicles • Protection of runway operations • Control of ground movements in low visibility operations • Adherence to standard phraseology in ATC communications • Adherence to ATC communication procedures (e.g. readback/hearback)

Key Safety Areas:

ICAO and EASA analyses of aviation safety data on a worldwide basis has identified that two of the main contributors to accidents with a high number of fatalities in commercial aeroplane operations are mid-air collision (MAC) and runway incursions (RI). Whereas the ANS providers may not always contribute to the cause of these type of accidents, they can play an important role in their prevention.

Figure D.1 shows that there were no accidents or serious incidents in the key safety areas of MAC or RI over the past 5 years. Figures D.2.(a), D.2.(b) and D.2.(c) combined show that over the past five years ANS providers reported 132 MAC related occurrences and 66 RI related occurrences. In 2022, there was 1 non-fatal accident dually categorised as 'loss of control – inflight' (LOC-I) and 'loss of control on the ground' (LOC-G) and 1 serious incident categorised as 'medical' (MED) when a crew member became incapacitated.

Table D.2 shows the trends from 2013 to 2022 for key ANS related safety performance indicators. Separation minimum infringements, airspace infringements and level bust events could be part of the causal chain of events that could lead to a MAC related occurrence, albeit there are other safety nets available (e.g. collision avoidance systems, ATC intervention etc) that add further protections in this regard. Deviation from ATC clearance can be associated with a MAC occurrence or with a runway incursion.

Number and Rate of ANS MORs: 2017 to 2022

Table D.3 provides a comparison between the number of flight hours flown and the corresponding MOR rates per 10,000 flight hours from 2017 to 2022. This table shows an 86% increase in the number of flight hours in 2022 compared to 2021, which represents a 90% recovery to 2019 levels. The average reporting rate pre-Covid (2017–2019) was 50.92, which rose to 62.74 during Covid (2020-2021) and was maintained at 59.39 post-Covid (2022), indicating that the organisations SMSs were well managed, despite the challenges for ANS staff due to the pandemic and the recovery there of.

Table D.3: **No. and rate of MORs according to flight hours from 2017 to 2022**

Year	Sectors Flown	Total	
		Number	Rate
2017	311,715	1,404	45.04
2018	315,776	1,733	54.89
2019	319,775	1,692	52.91
2020	131,296	876	66.72
2021	154,877	888	57.34
2022	288,262	1,712	59.39

Sub-section 2: Aerodrome Operations

A breakdown of the occurrences submitted between 2017 and 2019 (pre-Covid) by occurrence category and ARMS Risk Classification Band is shown in Figure D.4 (a) below, followed by comparative charts for 2020-2021 (during Covid) in Figure D.4 (b) and 2022 (post-Covid) in Figure D.4 (c).

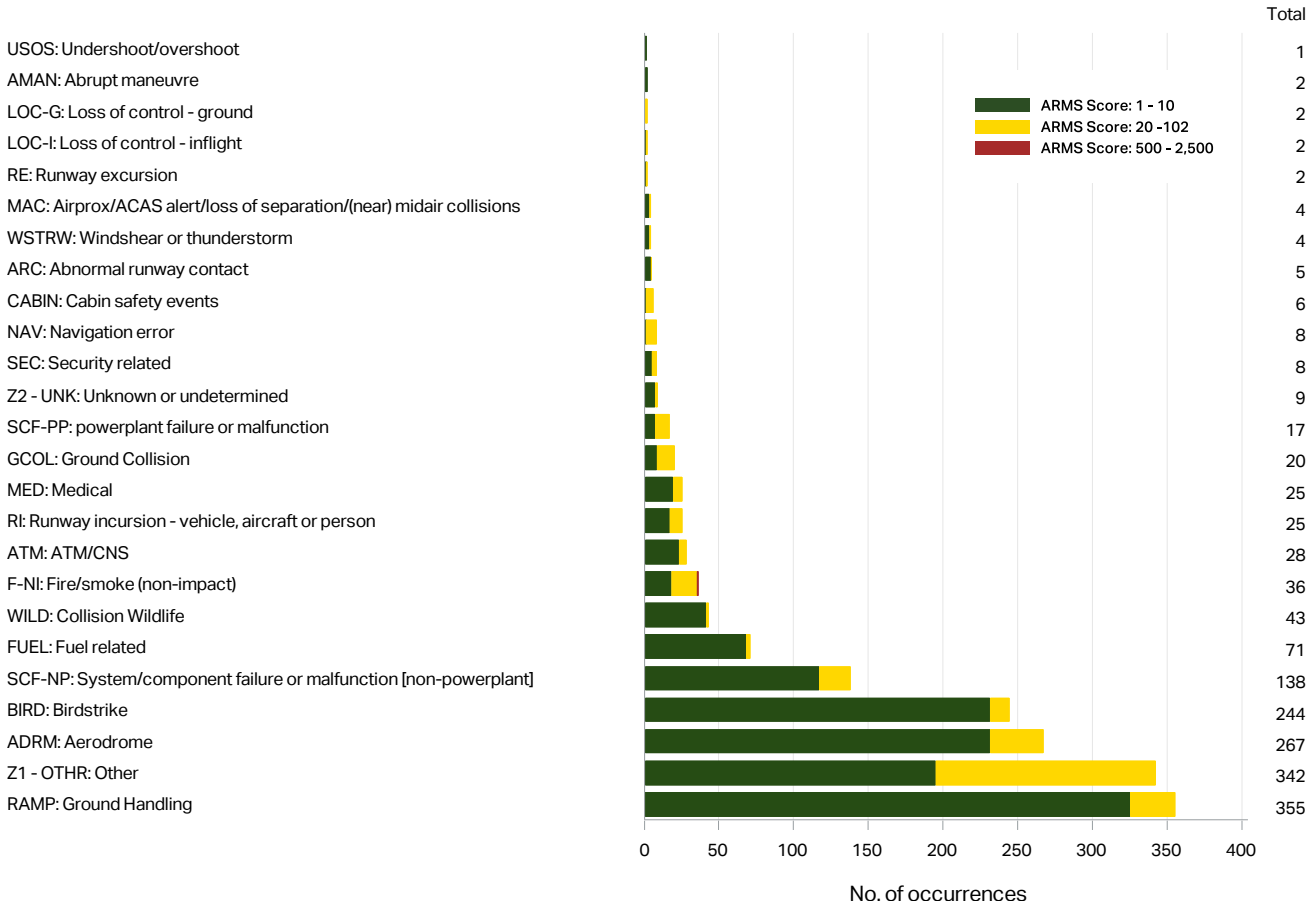


Figure D.4 (a): Aerodrome Occurrence Reports 2017-2019 (pre-Covid)

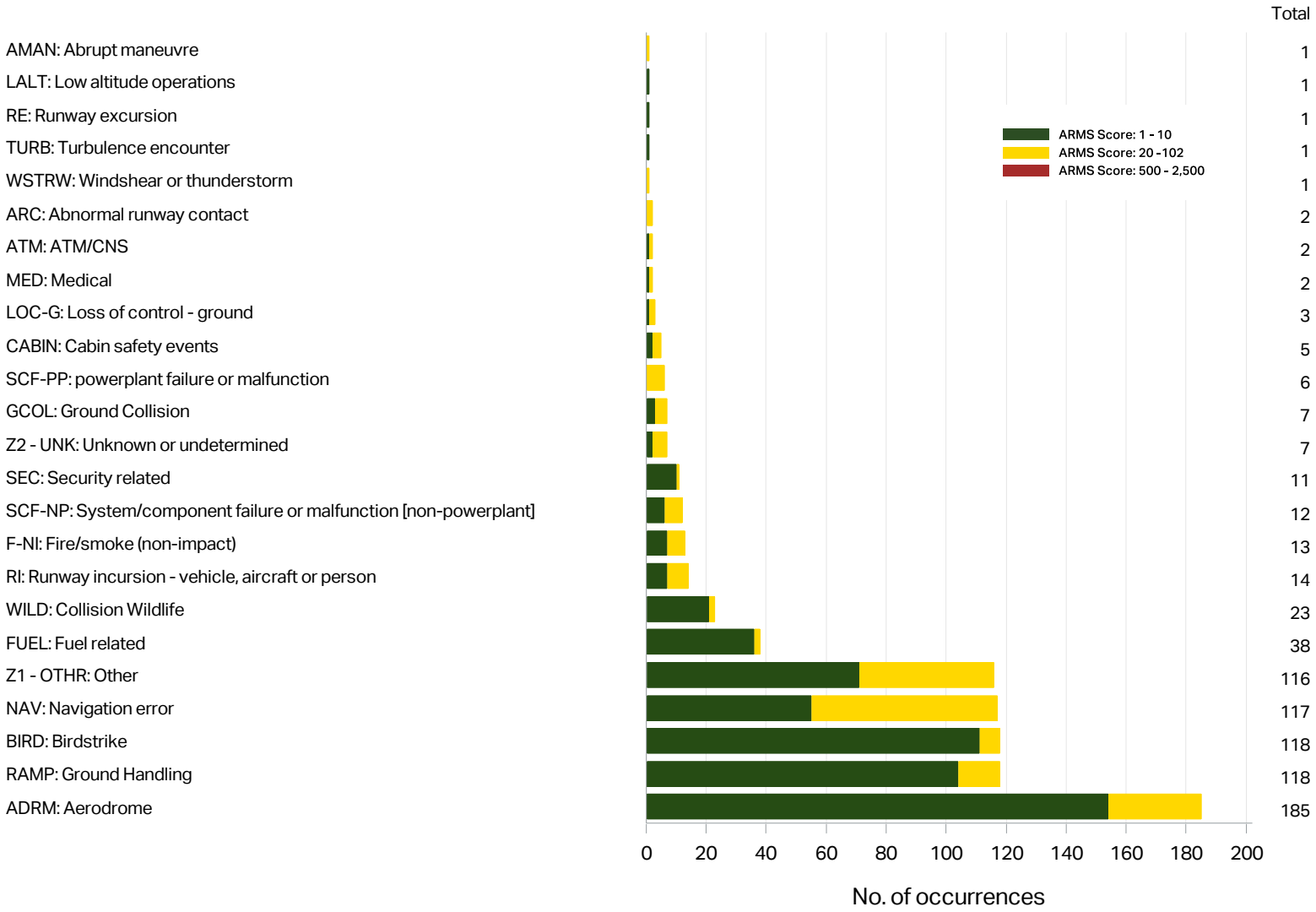


Figure D.4 (b): Aerodrome Occurrence Reports 2020-2021(during Covid)

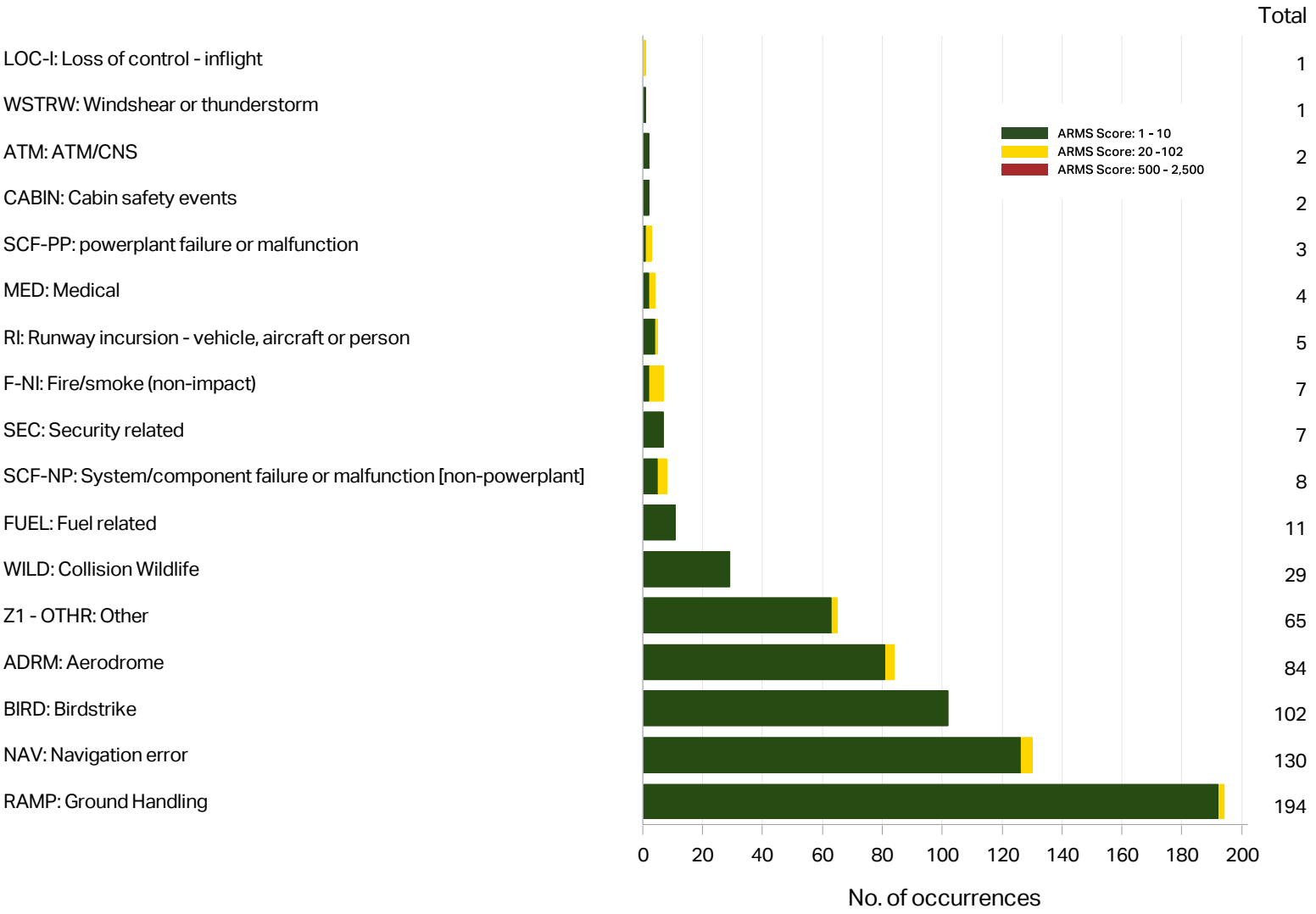


Figure D.4 (c): Aerodrome Occurrence Reports 2022 (post Covid)

The most reported occurrence categories largely remained the same when comparing pre-Covid, Covid and post-Covid time periods. However, RAMP was the number 1 occurrence category pre-Covid and is so again post Covid (2022) having dropped to 5th place during Covid (2020-2021). This is probably reflective of the busier ramp environment post Covid which is comparable to the pre-Covid levels of activity and aligns with the huge drop off in ramp movements that occurred during Covid. NAV has become a more commonly reported category both post-Covid and during Covid (2020-2021) than in previous years pre-Covid.

Figures D.4.(a), (b) and (c) show that ramp ground handling (e.g., loading, towing, fuelling of aircraft etc) and aerodrome related (including occurrences relating to the design and servicing of aerodrome facilities and equipment) were among the most common occurrence categories reported by aerodrome operators across all three timeframes examined i.e., pre-Covid (217-2019), during Covid (2020-2021) and post Covid (2022).

The navigation error category which includes 'flight crew atc clearance deviation', 'taxi clearance deviation' and 'atm regulation deviation' was more commonly reported post and during Covid than it had been pre-Covid.

Figure D.5 shows that the top event types reported during 2022 were 'aerodrome fod control', 'taxi clearance deviation', 'birdstrike' and 'flight crew atc clearance deviation'. These events are in line with some of the safety issues identified as part of the Covid-19 risk portfolio; "Increased presence of wildlife on aerodromes", "Hazards associated with aerodromes being closed or partially closed for long periods" and "Skills and knowledge degradation due to lack of recent practice". These appear to have remained pertinent issues in the immediate aftermath of Covid through 2022.

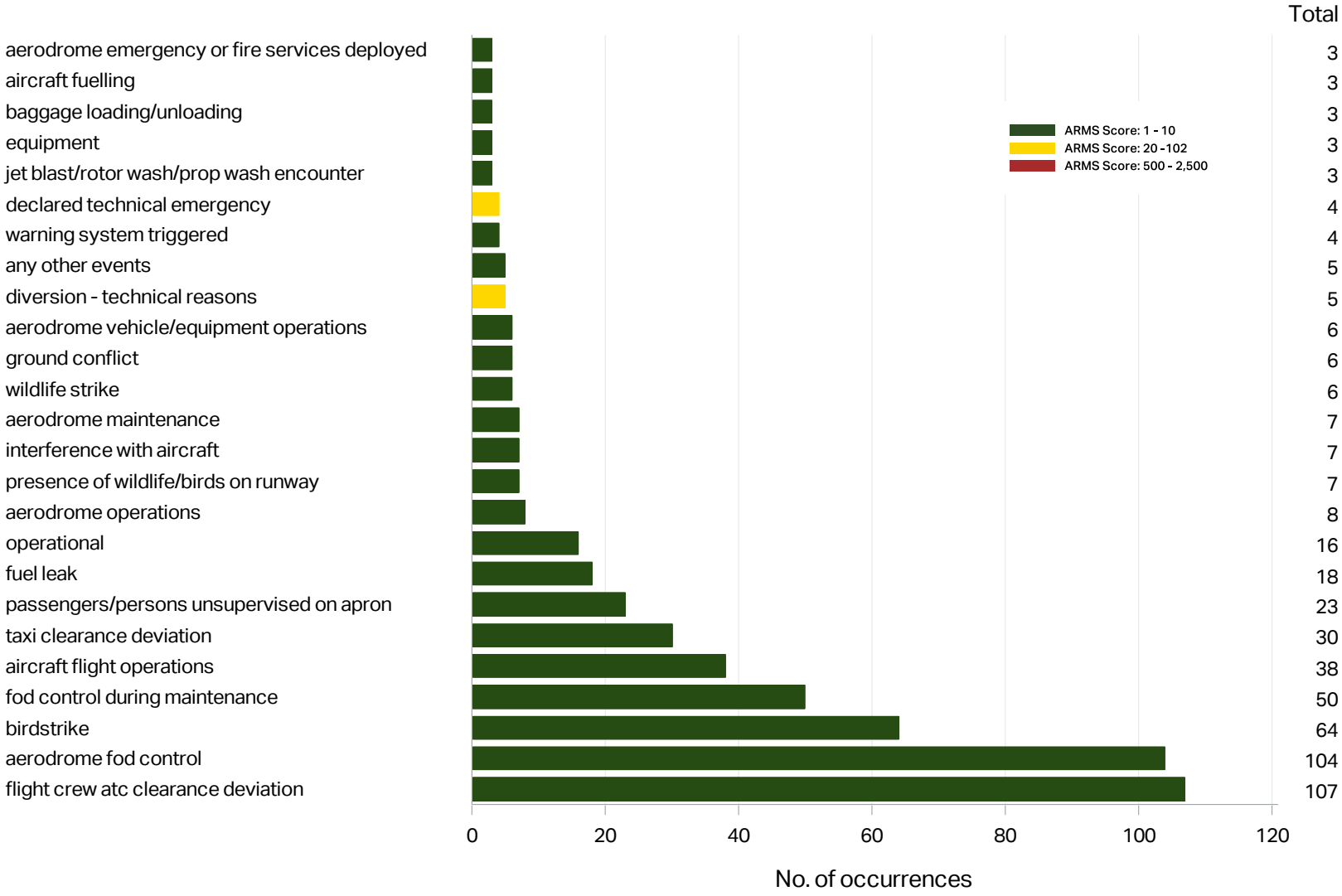


Figure D.5: Top Event Types – Aerodrome 2022

Safety Issues:

This section provides a summary of the main safety issues that emerge as a result of the analysis of these safety performance statistics for aerodrome operations. This detailed analysis of safety information in the Aerodrome domain in conjunction with follow-up information from the reporting organisations has identified the following safety issues that are included in the Aerodrome sector-based risk register.

KEY SAFETY AREA	SAFETY ISSUES
Runway Excursions (RE)	• Removal of runway contamination (e.g. snow, ice, foreign objects) • Maintenance of runway surface condition • Reporting on runway surface condition
Runway Incursion (RI)	• Management of ground movements in low visibility conditions • Deviation from ATC clearance by ground vehicles • Adherence to standard phraseology in ATC communications • Adherence to ATC communication procedures (e.g. readback/hearback)
Aircraft Upset (LOC-I)	• Adherence to aircraft loading procedures (e.g. passengers, baggage and cargo, fuel) and accurate completion of aircraft loadsheets when provided by aerodrome operator • Adherence to aircraft ground handling procedures (e.g. de-icing, dangerous goods) • Reporting of damage to aircraft during ground operations • Wildlife strike hazard management in the vicinity of airports • Awareness of LOC-I risk among ground handling agents

Additional Safety Areas

Runway incursion (RI), runway excursion (RE) and aircraft upset/loss of control - inflight (LOC-I) are key safety areas identified globally where aerodrome operations could have a bearing. Runway incursion events could be attributed to the unauthorised presence of ground vehicles on the runway, or the presence of wildlife, both of which could present a serious risk to an aircraft during take-off or landing. The condition of the runway surface itself, or failure to report this condition accurately, could contribute to the risk of a runway excursion. An aerodrome operator may also provide ground handling services some of which (e.g. aircraft loading or unreported aircraft damage) could in exceptional circumstances lead to flight control difficulties.

Over the past five years there have been no accidents or serious incidents categorised as runway incursion (RI) or runway excursion (RE), see Figure D.1 There was 1 non-fatal accident dually categorised as 'loss of control – inflight' (LOC-I) and 'loss of control on the ground' (LOC-G), this accident is still under investigation. While there was no accident or serious incident categorised as runway incursion Figures D.4. (a), (b) and (c) show that there were 44 runway incursions reported by aerodrome operators between 2017 and 2022.

Other Safety areas:

Many of the Ground Handling occurrences reported reflect events that do not affect the key safety areas but could nonetheless result in injury to passengers or aerodrome staff, and aircraft damage with potentially lengthy delays to passengers.

Aerodrome operators have primary responsibility for protection of the airport from drone infringements, including the temporary suspension of operations in case of an occurrence. The following safety issues are also included in the Aerodrome sector-based risk register.

The following safety issues are also included in the Aerodrome sector-based risk register.

KEY SAFETY AREA	SAFETY ISSUES
Safety of persons on the apron	• Routing of passengers from gate to aircraft steps • Condition of aircraft steps • Movement of ground operations personnel on the apron • Management of ground vehicle traffic in proximity to aircraft • Protection of personnel from jet-blast or propeller wash • Perception and situational awareness, especially during bad weather conditions and at nighttime • Experience, training and competence of individuals
Prevention of aircraft damage	• Co-ordination and control of turnarounds between various agencies • Ground vehicles approaching and positioning around aircraft and different aircraft types • Adherence to aircraft marshalling, pushback and towing procedures • Management of ground movements in low visibility conditions • Adherence to positioning, securing and decongestion procedures for ground service equipment on the apron
Drone infringements	• Management of aerodromes operations in the event of drone infringement, including suspension and re-activation of flight operations as required • Prohibition of drone flying in close proximity to an aerodrome

Number and rate of aerodromes MORs from 2017 to 2022

The following table outlines the number of movements along with the corresponding MOR rates per 10,000 movements annually from 2017 to 2022. The number of movements in 2022 more than doubled on 2021 levels, registering a 123% increase. However, the reporting rate decreased. The average reporting rate during the Covid years (2022-2021) of 32.00 was higher than the average pre-Covid (2017-2019) rate of 17.55 and the post-Covid (2022) rate of 24.23. The improved reporting rate over the pandemic years 2020-2021 may be due to the greater focus by industry on Safety Management Systems in their endeavours to monitor risks posed by the Covid-19 pandemic.

Table D.4: No. and rate of MORs according to movements from 2017 to 2022

YEAR	MOVEMENTS	TOTAL	
		NUMBER	RATE
2017	283,374	510	18.00
2018	293,961	462	15.72
2019	301,124	570	18.93
2020	114,483	360	31.45
2021	118,861	387	32.56
2022	264,924	642	24.23

SECTION E

GENERAL AVIATION IN IRELAND



Introduction

General Aviation (GA) in Ireland is defined as any aviation activity not categorised as Commercial Air Transport (CAT). It includes aviation activities regulated under European law such as.

- specialised operations (Part SPO) such as aerial photography, and parachute support operations; and
- non-commercial operations using non-complex aircraft (Part NCO) such as private flying, pilot training, introductory flights, and cost-sharing flights.

Aviation activities subject to Irish national law in accordance with Basic Regulation (EU) 2018/1139 Annex I, such as historic, amateur built (sometimes referred to as homebuilt), specific categories of helicopters, sailplanes, powered parachutes and balloons etc. are also included. Please refer to Regulation (EU) 2018/1139 Annex I for a more detailed break-down of the criteria for aircraft in these categories.

Due to the diverse range of GA activities in Ireland this section has initially been divided into two sections; EASA certified and non-EASA certified (Annex I), followed by a more detailed review on the safety performance of each subsector.

GA EASA Regulated Aircraft

All aircraft, certified and non-certified, which are not included in Annex 1 to 2018/1139 including:

- Aeroplanes with a maximum take-off mass (MTOM) of 2,250 kg and above and less than 5700kg.
- Aeroplanes with an MTOM less than 2,250 kg,
- Helicopters – with an MTOM of 2,250 kg and above.
- Helicopters – with an MTOM of less than 2,250 kg.
- Hot Air Balloons.
- Sailplanes and powered sailplanes - with rigid wings and undercarriage.

GA Non-EASA Regulated Aircraft; Aircraft subject to Irish national legislation (Annex I Aircraft)

- Historic Aircraft
- Amateur Built (Homebuilt) Aircraft
- Microlight aircraft – typically aeroplanes with MTOM less than 450 kg and flex-wing aircraft.
- Gyrocopters.
- Paragliders, powered paragliders (paramotors) and powered parachutes.

Note
Performance data for Part-NCC operations (i.e. involving complex aircraft) have been included in the commercial operations sections; refer to Section B: The Irish Fixed-wing Commercial Air Transport Sector and Section C: The Irish Commercial Helicopter Sector

Accidents and Serious Incidents:

Covid 19's waning grip on Irish society in early 2022 coincided with the traditional reopening of the Irish VFR season. The arrival of the omicron variant in the first quarter of the year had been less impactful than previous variants, likely due to the effectiveness of mass vaccinations programs and the virus's declining severity with each subsequent variant. Unlike CAT operations, there are no official movement figures for GA, however 2022 saw a resumption of the normal calendar of fly-ins and social gatherings, not experienced since pre-Covid.

Regrettably there were 2 fatal accidents in GA in Ireland in 2022 which resulted in 2 fatalities. One of these accidents involved a certified helicopter less than 2250kg and the other a powered paraglider. The aviation community is always deeply saddened by loss of any of its members and we extend our sympathy to the family, colleagues and friends experiencing this loss.

There were 8 non-fatal accidents, across most genres of general aviation, including EASA certified fixed wing and helicopters, as well as Annex 1 aircraft such as homebuilts, microlight and gyrocopter. There were 2 serious incidents, both of which involved EASA certified Fixed Wing aeroplanes < 2250kg.

While the primary objective in accident investigation is the prevention of accidents and incidents, it is a crude means of learning lessons and improving safety, which is why it behoves all of us as stakeholders to endeavour to raise the safety bar by all means possible in order to avoid catastrophic outcomes. This includes the implementation and use of safety occurrence reporting systems as well as safety promotion initiatives to promulgate safety information on lessons learnt hazard identification and risk mitigation.

A tabulated summary of the safety performance of this sector in respect of accidents and serious incidents in 2022 compared to the previous 4 years (2018-2021) is provided in Table E.1 below. It has been subdivided into EASA certified and non-EASA certified (Annex I) aircraft, as these two subdivisions are subject to differing regulatory regimes and oversight procedures.

Charts outlining the categorisation of accidents and serious incidents are provided. These include all General Aviation accidents and serious incidents that occurred in Ireland, whether the aircraft was registered in Ireland, or registered abroad (e.g. visiting aircraft or foreign registered aircraft based in Ireland).

Table E.1

	GA SUB-SECTOR	NO. OF FATAL ACCIDENTS (FATALITIES) 2022	TOTAL NO. OF FATAL ACCIDENTS 2018-2021 WITH (TOTAL FATALITIES)	NO. OF NON-FATAL ACCIDENTS 2022	TOTAL NO. OF NON-FATAL ACCIDENTS 2018-2021	NO OF SERIOUS INCIDENTS 2022	TOTAL NO. OF SERIOUS INCIDENTS 2018-2021
EASA Certified Aircraft	Aeroplanes >2250 ≤5700 kg	0 (0)	1 (2)	1	3	0	0
	Aeroplanes ≤2250 kg	0 (0)	0 (0)	2	9	2	5
	Helicopters > 2250 kg	0 (0)	0 (0)	0	0	0	0
	Helicopters ≤ 2250 kg	1 (1)	0 (0)	1	0	0	0
	Sailplanes	0 (0)	0 (0)	0	3	0	0
	Balloons	0 (0)	0 (0)	0	0	0	0
Annex I Aircraft	Annex 1 Aeroplanes ≤2250 kg	0 (0)	1 (2)	0	2	0	1
	Homebuilt ≤2250 kg	0(0)	1 (2)	2	3	0	2
	Microlight aircraft	0 (0)	2 (2)	1	7	0	0
	Gyrocopters	0 (0)	0 (0)	1	0	0	0
	Glider, powered paragliders, paragliders, and powered parachutes	1 (1)	1 (1)	3	3	0	0

Land Aeroplanes - with an MTOM > 2,250 kg ≤ 5,700kg.

There were 4 land aeroplanes with an MTOM > 2,250 kg ≤ 5,700kg Irish aircraft register at the end of 2022.

There were no fatal accidents, 1 non-fatal accident, and no serious incidents involving land aeroplanes in this category in 2022. The non-fatal accident involved a foreign registered aeroplane and categorised as 'Abnormal Runway Contact' (ARC).

Over the previous four years (2018-2021) there was 1 fatal accident, 3 non-fatal accidents and no serious incidents. The fatal accident occurred in 2018, involving a foreign registered aircraft while operating in accordance with Part-SPO (Specialised Operations), resulting in two fatalities and was categorised as 'Loss of Control - Inflight' (LOC-I). The non-fatal accidents included 2 Irish and 1 foreign registered aircraft, 2 were categorised as 'Abnormal Runway Contact' (ARC) and 1 categorised as 'Significant Component Failure – Powerplant' (SCF-PP).

EASA Regulated Land Aeroplanes - MTOM ≤ 2,250 kg

There were 114 EASA certified land aeroplanes with an MTOM ≤ 2,250 kg on the Irish aircraft register at end of 2022.

In 2022 there were no fatal accidents, 2 non-fatal accidents and 2 serious incidents in this sub-sector. Both non-fatal accidents were categorised as 'Runway Excursion' (RE). One serious incident was categorised as 'Runway Excursion' (RE) while the other was categorised as Fire/smoke non-impact (F-NI).

During the previous 4 years (2018-2021) there were no fatal accidents, 9 non-fatal accidents and 5 serious incidents. 'Abnormal Runway Contact' (ARC) was the most commonly assigned categorisation to these events with 'Runway Excursion' (RE), 'Fuel' (FUEL), 'Significant Component Failure – Powerplant' (SCF-PP), 'Loss of Control - Inflight' (LOC-I), 'Collision with obstacles during take-off and landing' (CTOL), and 'Significant Component Failure – Non Powerplant' (SCF-NP) also being assigned categorisations. Among the 5 serious incidents 4 concerned foreign registered aircraft.

Annex I Land Aeroplanes MTOW ≤ 2250 kgs.

In 2022 there were no fatal accidents, non-fatal accidents or serious incidents involving aircraft in this sub-sector.

Over the previous four years (2018-2021), aeroplanes in this sub-sector were involved in 1 fatal accident with 2 fatalities, involving an Irish registered aircraft which was categorised as 'Significant Component Failure - Non-Powerplant' (SCF-NP). There were also 2 non-fatal accidents and 1 serious incident in this four-year period, all involving Irish registered aircraft. The categorisations assigned to these accidents were 'Abnormal Runway Contact' (ARC) and 'Loss of control on the ground' (LOC-G).

The AAIU assigned occurrence categories for accidents and serious incidents involving Land Aeroplanes MTOM ≤ 2,250 kg (EASA Regulated and Annex 1 aircraft) in the last five years are shown in Figure E.2.

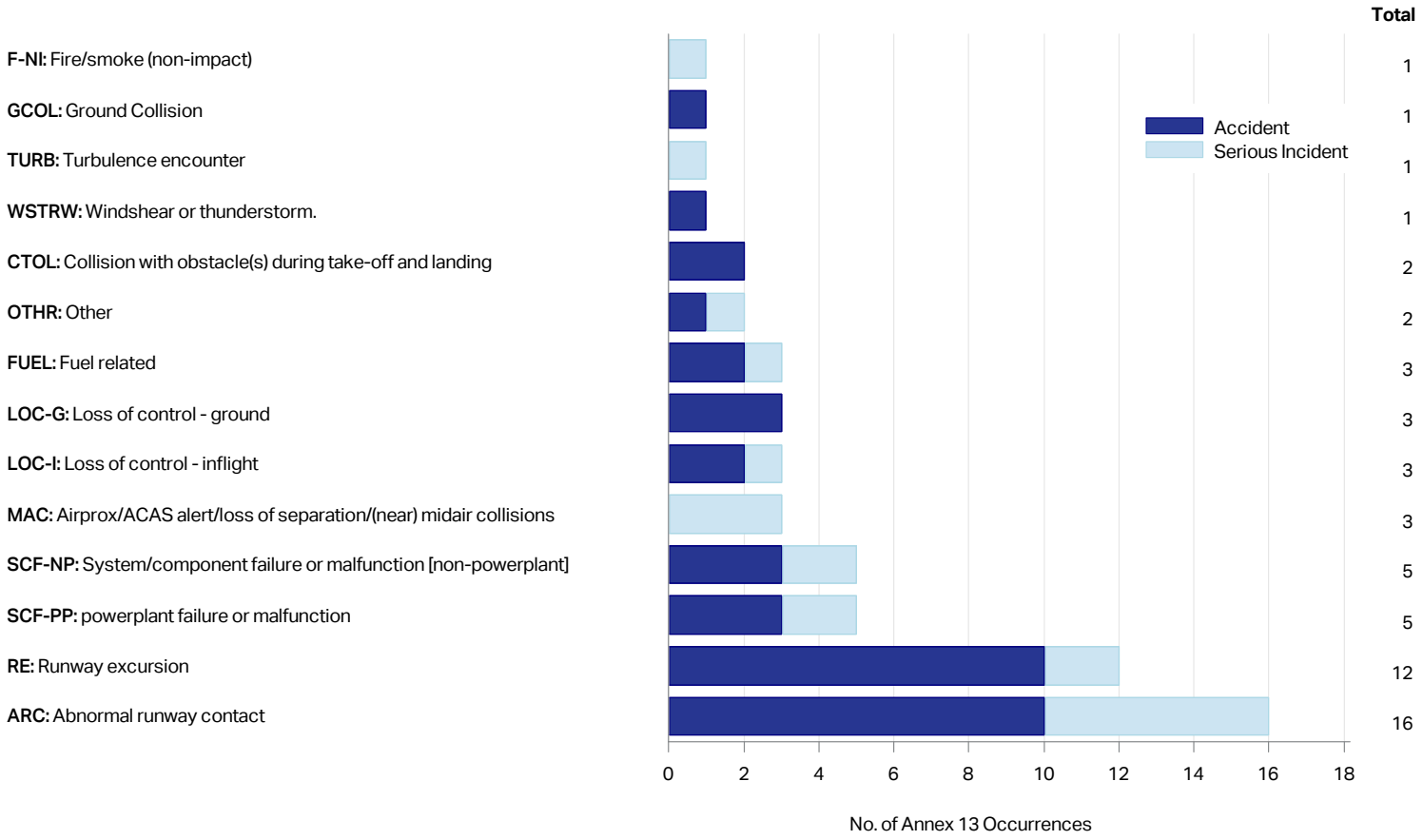


Figure E.2: Occurrence categories assigned to accidents and serious incidents involving GA aeroplanes with an MTOM below 2,250 kg (2018-2022).
Note: some events have been assigned more than one categorisation.

Rotorcraft

There were 6 complex rotorcraft and 17 non-complex rotorcraft registered in Ireland at the end of 2022.

In 2022, there was 1 fatal accident involving a foreign registered non-complex rotorcraft with 1 fatality, initially categorised as 'Loss of control in flight' (LOC-I) . The AAIU investigation of this accident is ongoing. There was 1 non-fatal accident involving a foreign registered non-complex rotorcraft, initially categorised as 'Loss of control in flight' (LOC-I). There were no serious incidents in this sector in 2022.

During the previous four years (2018–2021) there were no fatal accidents, non-fatal accidents or serious incidents involving GA helicopters.

Homebuilt aeroplanes

There were 74 homebuilt aeroplanes on the Irish aircraft register at end of 2022 in this sub-sector.

There were no fatal accidents, 2 non-fatal accidents, both categorised as ARC and no serious incident involving homebuilt aeroplanes in 2022.

During the previous four years (2018–2021) there was 1 fatal accident with 2 fatalities which occurred in 2019, involving a foreign registered aircraft and was categorised as 'Loss of Control- Inflight' (LOC-I). In addition, there was 3 non-fatal accidents involving 2 Irish registered aircraft and 1 foreign registered aircraft. The non-fatal accidents were categorised by the AAIU as; 'Abnormal Runway Contact' (ARC), 'Runway Excursion' (RE), 'Collision with obstacles during take-off and landing' (CTOL), 'Loss of control on the ground' (LOC-G) and Windshear or thunderstorm (WSTRW). There were 2 serious incidents, 1 involving a foreign registered and 1 involving an Irish registered aircraft. These events were categorised as 'Abnormal Runway Contact' (ARC), 'Significant Component Failure - Non-Powerplant' (SCF-NP) and 'Turbulence encounter' (TURB).

Microlight aircraft

At the end of 2022, there were 168 microlights on the Irish aircraft register.

There were no fatal accidents, 1 non-fatal accident and no serious incidents involving Microlight aircraft in 2022.

During the previous four years (2018-2021) there were 2 fatal accidents, 7 non-fatal accidents and no serious incidents. Regarding the 2 fatal accidents; 1 occurred in 2019 involving a foreign registered microlight with 1 fatality, categorised as 'Collision with obstacles during take-off and landing' (CTOL) and 1 occurred in 2018 involving an Irish registered microlight with 1 fatality, categorised as 'Loss of Control – Inflight' (LOC-I). The non-fatal accidents involving 5 Irish and 2 foreign registered aircraft were categorised as 'Significant Component Failure – Powerplant' (SCF-PP), 'Windshear or thunderstorm' (WSTRW), 'Loss of Control – Inflight' (LOC-I), 'Collision with obstacles during take-off and landing' (CTOL), 'Abnormal Runway Contact' (ARC) and 'Runway Excursion' (RE).

Sailplanes

There were 29 sailplanes, including 2 powered sailplanes and 1 homebuilt sailplane on the Irish aircraft register at the end of 2022.

There were no fatal accidents, non-fatal accidents, or serious incidents involving sailplanes in 2022.

Over the previous four years (2018-2021) there were 2 non-fatal accidents, 1 accident involved an Irish registered aircraft, categorised as 'Collision with obstacles during take-off and landing' (CTOL) and 1 accident involved a foreign registered aircraft, categorised 'Glider Towing related event' (GTOW).

Gyrocopters

At the end of 2022, there were 22 gyrocopters, including 3 homebuilt gyrocopters on the Irish aircraft register.

In 2022 there were no fatal accidents, 1 non-fatal accident involving an Irish registered gyrocopter and no serious incidents. There were no fatal accidents, non-fatal accidents, or serious incidents over the previous four years (2018-2021).

Paragliders, powered paragliders and powered parachutes

At the end of 2022 there were 30 powered paragliders registered in Ireland.

There was 1 fatal accident, 3 non-fatal accidents and no serious incidents in this sector in 2022. 'Loss of Control – Inflight' (LOC-I) is the assigned categorisation in 3 of these accidents with 'Controlled Flight into Terrain' (CFIT) assigned to the fourth accident.

During the previous four years (2018-2021) there was 1 fatal accident involving an Irish registered paraglider, with 1 fatality which was classified as 'Unknown' (UNK). In addition, there were 3 non-fatal accidents categorised as 'Loss of Control – Inflight' (LOC-I), 'Loss of control on the ground' (LOC-G) and 'Collision with obstacle(s) during take-off and landing' (CTOL. There were no serious incidents during that timeframe.

GA Flight Training

Currently there are 24 organisations in Ireland providing flight training in general aviation. There was 1 non-fatal accident involving flight training in 2022, categorised as 'Abnormal Runway Contact' (ARC). The categories assigned to GA flight training incidents over the past five years are presented in Figure E.3. 'Abnormal Runway Contact' (ARC) is the most commonly assigned categorisation in recent years in this sector. A large part of GA flight training is based on honing the skills and motor memory in the real environment which can be challenging in the early stages of practical training.

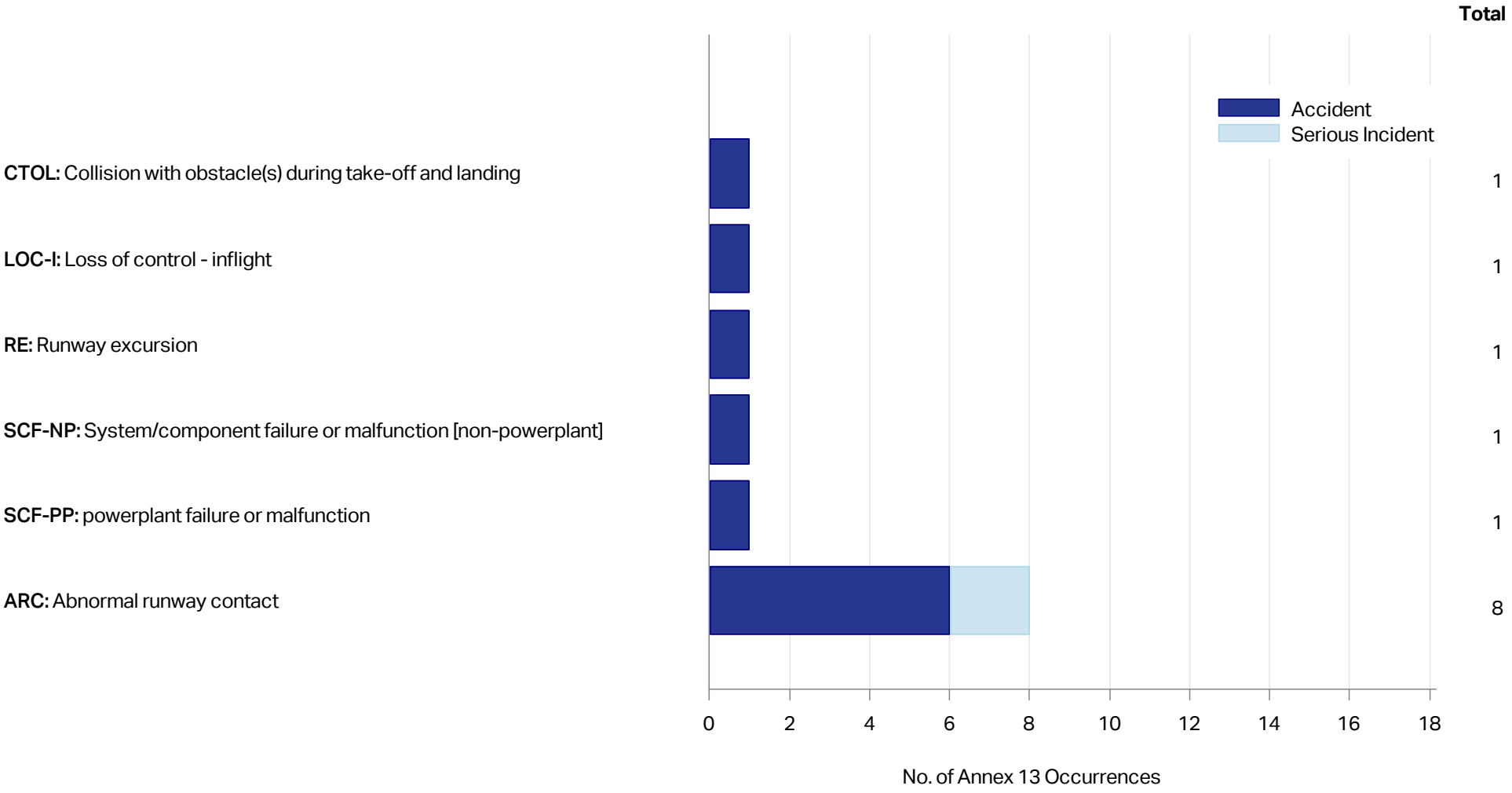


Figure E.3: Categories of accidents and serious incidents involving GA aeroplanes while flight training (2018-2022)
Note: some events have been assigned more than one categorisation.

Occurrence Reports

Private pilots flying general aviation EASA type certified aircraft are required to submit mandatory occurrence reports in accordance with Regulation (EU) No 376/2014. Even though many of the aircraft involved in this sector are not type certified, it is possible for the pilots of these aircraft to report occurrences on a voluntary basis using the same systems. The IAA website https://www.iaa.ie/safety/safety-reporting provides guidance on occurrence reporting requirements as well as the links necessary to submit reports to the IAA. In support of the just culture principle, the regulations contain provisions concerning confidentiality, protection of reporters and appropriate use of information contained in occurrence reports.

Occurrence reporting levels from Flight Crew Training Organisations (FCTO) recovered in 2021 and 2022. System Component Failure. Navigational Error and Abnormal Runway Contact, and were the top 3 known categories identified in the submitted mandatory occurrence reports during 2022.

The number of reports from GA pilots continues to remain too low to support statistical analysis. The accepted relationship between serious accidents, minor accidents and near misses known as Heinrich's law or the accident pyramid supports the understanding that this lack of reports results in the awareness gained from lower-level occurrences that could later present as accidents and serious incidents (in other circumstances) is not being captured. Unfortunately, this also results in only high-risk accidents and serious incidents, normally very visible and with severe outcomes, are being reported and investigated. The IAA continues to promote safety occurrence reporting in general aviation with the sole objective to support the sharing of safety information among the GA community through safety promotion activities.

The General Aviation Safety Council of Ireland (GASCI), whose membership includes general aviation clubs, societies, training organisations, drone organisations, the IAA and the AAIU, provides the platform for many of the safety promotion activities in Ireland. Safety information derived from aviation occurrences in Ireland and abroad are reviewed by GASCI and the lessons learned form the basis for GASCI safety promotion actions. GASCI shares safety information on its website (gasci.weebly.com) and twitter account (@Gasci_ie) and hosts very informative and well attended safety evenings. GASCI has also established its own reporting site where those involved in GA activities can voluntarily share safety information https://gasci.weebly.com/report-an-incidentcontact-us.html



tent authorities (Article 5) to establish voluntary occurrence reporting systems (VORS), this enables the reporting of any occurrence or safety related information by individuals which are not subject to mandatory reporting and encourages the reporting of any safety relevant occurrence. This proactive process enables the collection of information about safety concerns, issues and hazards, which otherwise will not be revealed by the mandatory reporting system.

Figure E.4 below outlines the numbers of VORs reported by individuals over the past five years according to totals and ARMS Risk Classification Band.

The top three types of events reported concerned: RPAS/drone operations, reports from individuals on organisational management safety issues in their organisations, and aircraft related safety issues. These reports do not include VORs submitted by persons through their own organisational voluntary reporting systems, which are addressed by organisations themselves under their SMS. Persons who feel that their organisation is not sufficiently addressing their concerns, may report directly to the IAA.

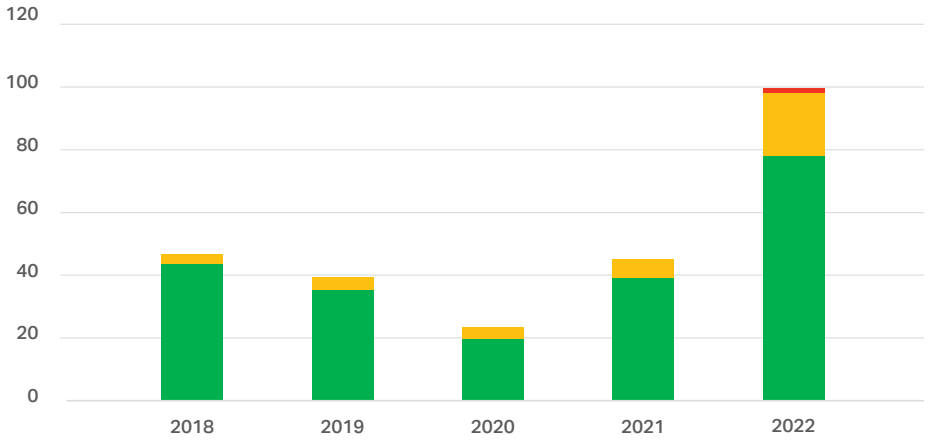


Table E.4: VORs submitted by Individuals to the IAA

Safety Issues

The detailed analysis of the main causes of the accidents and serious incidents helps identify the main safety areas and related safety issues for general aviation. The IAA is greatly assisted in this regard by GASCI, from their insight and interaction with membership across the sector.

Safety risk management tools such as monitoring, mitigation and the promulgation of safety material became instrumental throughout the pandemic in determining a safe means to navigate through the uncertainty trust upon all aspects of aviation. They continued to be essential indicators during the return to normal operations post pandemic.

GA Specific Safety Issues

The following table outlines safety issues identified from the analysis of accidents and serious incidents and are included in the IAA GA sector-based risk register. The GA risk register is not only informed by the Irish experience, but it includes the pan-EU safety issues identified in the EASA Annual Safety Review and European Plan for Aviation Safety.

“Poor pre-flight planning and preparation”, “Damage tolerance to UAS collisions”, “Airborne separation”, “Engine system reliability” and “Approach path management on GA aeroplanes” are among the issues highlighted in both the European Plan for Aviation Safety and the Irish State Plan for Aviation Safety.

EASA ASR 2022 also outlines how EASA has reviewed the accidents and serious incidents involving non-commercially operated small aeroplanes (<5700kg MTOM) for 2017-2021, excluding non-certified aircraft (Annex I to Regulation (EU) 2018/1139). The KRA (key risk area) with the highest risk is aircraft upset. while runway excursion is a more common KRA, there is a lower risk of fatal or serious injuries associated with it. In Ireland, RE was the second most common occurrence category assigned to accidents and serious incidents involving GA aeroplanes with an MTOM below 2,250 kg (2018-2022), see Figure E.2.

SAFETY AREA	SAFETY ISSUES
Loss of Control -Inflight	• Recognition and recovery from aircraft upset • Awareness of flight attitude • Decision making and control of aircraft, following engine failure • Recognition of, and response to, carburetor icing • Operations of light aircraft within recommended mass and balance limits • Proficiency in practiced forced landings • Awareness of performance differences between different GA aircraft types
Collision with terrain or obstacle	• Inadvertent flight into degraded visual environments • Flight below minimum safe altitude (e.g. for weather avoidance) • Pre-flight planning • Situational awareness during flight • Use of advanced technologies • Use of aeronautical charts and terrain and obstacle databases
Mid-Air Collision	• Use of see and avoid • Good communications to aid in overall situational awareness • Safety Management at Club fly-ins and airshows • Conflict with Drones • Use of advanced technologies
Take-off and Landing	• Runway excursion or heavy landing following aircraft handling or environmental issues • Take-off and landing from hard/soft airstrips • Collision with obstacles
Specialised Operations	• Aircraft upset caused by system failure or a lapse in perception and situational awareness • The intrinsic risks of intentional low flying require mitigations such as training, experience and competence
Human Factors	• Threat and error management for GA • Decision Making Single Pilot CRM
Other	• Safety of ground operations during club fly-ins • Overall, an awareness of and mitigation against degraded proficiency after prolonged spells of inactivity such as the return to VFR flying after the winter

In contrast to the CAT environment, private pilots do not have the benefit of a safety management system (SMS) in their day to day flying once they leave the environs of training organisations (ATOs and DTOs). Strong safety promotion networks are the most readily available safety tool that can assist GA pilots in strengthening their resilience by better equipping them to address the challenges of identifying hazards and developing the ability to mitigate against the associated risks. The General Aviation Safety Council of Ireland (GASCI) continued to provide excellent safety promotional material throughout 2022 with a welcome return to in-person events post Covid. Topics presented on and discussed included, single pilot

CRM/TEM, winter operations, carburettor icing and crosswind landings. This compliments the State Plan for Aviation Safety in Ireland specific actions to develop safety promotion material for general aviation in conjunction with GASCI. The following websites contain existing safety promotion guidance that may be of interest to those involved in general aviation:

https://www.iaa.ie/general-aviation/safety-information

https://gasci.weebly.com/

https://www.easa.europa.eu/easa-and-you/safety-management/safety-promotion

https://www.easa.europa.eu/community/content/wellbeing

https://www.easa.europa.eu/community/ga



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Disclaimer

The data presented in this document is strictly for information purposes only. It is obtained from a number of different sources and, whilst every care has been taken to ensure the accuracy of the data and to avoid errors in the content, the IAA makes no warranty as to the accuracy, completeness or currency of the content.

Scope and Content of the Report

The Annual Safety Review provides statistics on safety in the Irish aviation industry. Information relating to the safety activity the IAA has undertaken or intends to undertake is presented in the IAAs State Safety Plan. The IAA has published its 2023-2025 State Safety Plan which is available on the IAA website www.iaa.ie along with previous editions of the State Safety Plan.

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