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 12/12/2023 from Stephen Smyth I recommend that section 131 of the Planning and Development Act, 2000 be/not be invoked at this stage for the following reason(s): no new material issues

E.O.: Pat B Date: 28/12/2023

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: _____

Validation Checklist

Lodgement Number : **LDG-069011-23**
Case Number: **ABP-314485-22**
Customer: **Stephen Smyth**
Lodgement Date: **12/12/2023 12:48:00**
Validation Officer: **Patrick Buckley**
PA Name: **Fingal County Council**
PA Reg Ref: **F20A/0668**
Case Type: **Normal Planning Appeal PDA2000**
Lodgement Type: **Observation / Submission**

Validation Checklist	Value
Confirm Classification	Unconfirmed
Confirm ABP Case Link	Unconfirmed
Fee/Payment	Valid – Correct
Name and Address available	Unconfirmed
Agent Name and Address available (if engaged)	Not Applicable
Subject Matter available	Unconfirmed
Grounds	Unconfirmed
Sufficient Fee Received	Unconfirmed
Received On time	Unconfirmed
Eligible to make lodgement	Unconfirmed
Completeness Check of Documentation	Unconfirmed

✓

F.A.

28/12/23

Run at: 28/12/2023 10:32

Run by: Patrick Buckley

Lodgement Cover Sheet - LDG-069011-23

An Bord Pleanála

Details

Lodgement Date	12/12/2023
Customer	Stephen Smyth
Lodgement Channel	Email
Lodgement by Agent	No
Agent Name	
Correspondence Primarily Sent to	
Registered Post Reference	

Lodgement ID	LDG-069011-23
Map ID	
Created By	Karen Byrne
Physical Items included	No
Generate Acknowledgement Letter	
Customer Ref. No.	
PA Reg Ref	F20A/0668

Categorisation

Lodgement Type	Observation / Submission
Section	Processing

PA Name	Fingal County Council
Case Type (3rd Level Category)	Normal Planning Appeal PDA2000

Fee and Payments

Specified Body	No
Oral Hearing	No
Fee Calculation Method	System
Currency	Euro
Fee Value	50.00
Refund Amount	

Observation/Objection Allowed?	Yes
Payment	
Related Payment Details Record	

Observation

	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,

Run at: 19/12/2023 12:50

Run by: Karen Byrne

			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

PA Case Number	F20A/0668	Development Description	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

PA Decision Date	08/08/2022
County	
Development Type	
Development Address	Dublin Airport, Co. Dublin
Appellant	
Supporting Argument	

	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.
Applicant	
Additional Supporting Items	Yes

Mary Tucker

From:	Bord
Sent:	Wednesday 13 December 2023 09:02
To:	Appeals2
Subject:	FW: Case PL06F.314485 - Observation on Significant Additional Information
Attachments:	Observation-on-a-Planning-Appeal-Form-North_Runway - Dec 2023.pdf

From: Steve Smyth <steve.s.smyth@gmail.com>
Sent: Tuesday, December 12, 2023 10:10 PM
To: Bord <bord@pleanala.ie>
Subject: Case PL06F.314485 - Observation on Significant Additional Information

Dear inspector,

I have previously made an observation on this appeal and paid €50 at that time. I now attach my updated observation following the publication of significant additional information by An Bord Pleanala.

Regards

Stephen Smyth

An Bord Pleanála

Observation on a Planning Appeal: Form.

Your details

1. Observer's details (person making the observation)

If you are making the observation, write your full name and address.

If you are an agent completing the observation for someone else, write the observer's details:

Your full details:

(a)	Name	Stephen Smyth
(b)	Address	Newpark, The Ward, Co. Dublin, D11EF2R

Agent's details

2. Agent's details

If you are an agent and are acting for someone else **on this observation**, please **also** write your details below.

If you are not using an agent, please write "Not applicable" below.

(a)	Agent's name	Not applicable
(b)	Agent's address	Not applicable

Postal address for letters

3. During the appeal process we will post information and items to you **or** to your agent. For this observation, who should we write to? (Please tick ✓ one box only.)

You (the observer) at the address in Part 1	✓	**The agent at the address in Part 2**	☐

Details about the proposed development

4. Please provide details about the appeal you wish to make an observation on. If you want, you can include a copy of the planning authority's decision as the observation details.

(a) Planning authority

(for example: Ballytown City Council)

Fingal County Council

(b) An Bord Pleanála appeal case number (if available)

(for example: ABP-300000-19)

PL06F.314485

(c) Planning authority register reference number

(for example: 18/0123)

F20A/0668

(d) Location of proposed development

(for example: 1 Main Street, Baile Fearainn, Co Abhaile)

Dublin Airport, Co Dublin

Observation details

5. Please describe the grounds of your observation (planning reasons and arguments). You can type or write them in the space below or you can attach them separately.

I am submitting this observation following a receipt of notification from An Bord Pleanala of the significant additional information submitted by the applicant. Please note that as a person that has contributed an observation on this case previously and already paid the €50 fee no new fees are required. My observation is contained on the following pages.

1.0 IMPACT OF PEAK LAmax NOISE LEVELS FROM AIR TRAFFIC MOVEMENTS (ATM) ON SLEEP

Item 1 of the Request for Further Information (RFI) issued by ABP to the applicant on 27 April 2023 requests the following,

> You are requested to assess the probability of additional awakening due to the peak $L_{A,S,Max}$ of ATMs at night between 2300 and 0700hrs for the 92 day summer average of ATMs and airport modes, and for the single modes of airport operation and for the likelihood of additional awakenings for the overall annual average number of ATMs at night, based on the approach described in the review supporting the WHO ENG 2018 (*Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and the Effects on Sleep – International Journal of Environmental Research and Public Health*)
>
> The Scenarios tested should include baseline conditions and the future operation of the airport proposed u nder the current application.

The applicant's response to this item is contained in the document titled "Noise Modelling Report ABP RFI 27 Apr 2023" dated 13 September 2023 by Bickerdale Allen Partners.

This document outlines the methodology adopted by the applicant to calculate the number of additional awakenings across the entire population of the study area, approximately 1million people.

This approach is to review the problem at a project level only and effectively dilutes the impact that will be felt by those communities being overflown at night for the first time. I would argue that this approach is not appropriate as it does not clearly define for those communities what the impact will be in terms of additiona lawakenings for the baseline and proposed scenarios.

A more appropriate presentation of the results would be to present contours indicating the probability of additional awakenings for each of the scenarios presented.

At my own property I have paid for continuous noise monitoring to be carried out over the summer of 2023. A full 92 day summer period was monitored, including $L_{AS,Max}$ levels – attached in Appendix 1. An analysis of that data has found that for the most common aircraft types the external $L_{AS,Max}$ levels measured were in the range of 76 to 84dB.

On a summer night when I may wish to sleep with a window open that would afford a reduction from outside to inside of the order of 10 to 15dB across an open window. Resulting in internal $L_{AS,Max}$ levels in the range of 61 to 69dB.

Applying the formula for calculating the probability of additional awakenings from aircraft noise as outlined in the RFI it is possible to calculate the probability of my family being woken for these most common aircraft types.

In single mode operation when departures from the North Runway are directly over my property the applicant has indicated that for an annual average night there will be 32 departures at night during the proposed scenario[1].

This results in the probability of my family being woken ranging from 2 to 3 additional awakenings each night. This in my view represents a significant impact on the ability of my family to sleep in our property if this application is granted.

That conclusion is validated by the lived experience of nights when the south runway is closed for maintenance and the north runway operates through the night. On those nights it is a regular occurrence to be woken by aircraft noise during the night. It is also my experience that I am woken each and every morning by the first departing flights from the North Runway at 7am each day. That is with the windows closed.

Nowhere in the RFI response does it explain to me or my community how devastating the impact will be. Instead, the applicant dilutes the assessment over a 1 million population to state that the average person in the entire study area will have a 3% chance of an additional awakening. That is simply an exercise in hiding the real impact for those of us most affected.

I call on An Bord Pleanala to recognise the inadequacy of the information submitted and to refuse permission on the grounds that the proposal will seriously adversely affect thousands of people without any consideration for effective mitigation.

2.0 SENSITIVITY TESTING OF THE POPULATION NUMBERS COVERED BY THE NOISE CONTOUR PREDITIONS

The second point of the RFI asks the applicant to provide some assessment of the uncertainty of their impact assessment. The wording is as follows,

To better understand what the consequences of uncertainty in the input data might be, or at least the associated trends with such uncertainty on the area covered, and the population affected by the noise contours presented in the EIAR. You are requested to present further analysis by sensitivity testing of:

(a) the noise contours,

(b) the area covered and

(c) crucially the number and type of sensitive receptors affected when assessed using the significance criteria in the EIAR, based on the assumption of +/- 1 dBA change in the predicted noise levels (crudely equivalent to an approximately 25% change in the area of the noise contours or all things being equal the number of ATMs used to calculate the noise contours).

---

1 Table 13B-8 of Appendix 13B of the EIAR Supplement

The response from the applicant has prepared a series of scenarios for comparison as follows,

- 2025 Predicted 1dB Higher
- 2025 Predicted 1dB Lower
- 2035 Predicted 1dB Higher
- 2035 Predicted 1dB Lower

For each scenario tables of the number of people exposed to either adverse or beneficial effects of air noise are presented for each magnitude of effect listed in the EIAR. The table compares the proposed scenario to the permitted scenario for the ±1dB option being considered in each assessment year.

Table 40 of the applicant's report summarises the number of people with significant effects at night, both beneficial and adverse effects are presented. This is reproduced here.

Year / Scenario	No. of People with Significant Effect (L_{night})	
	Beneficial	Adverse
2025Proposed	6,424	10,109
2025 Proposed (+1 dB(A))	9,163	12,575
2025 Proposed (-1 dB(A))	3,846	7,807
2035 Proposed	185	9,456
2035Proposed (+1 dB(A)	208	1 504
2 035 Proposed (1 dB(A))	170	8396

Table40: Significant Effectsby Scenario (L_{night})

Focusing on the 2035 scenarios it is clear to see that the proposed Relevant Action will have significantly more adverse effects than beneficial effects. The figures also show that if the applicants modelling is inaccurate to the tune of only 1dB the number of people affected increases significantly of the order of 22%.

I would direct the inspector to the noise monitoring report attached to this document at Appendix 1 which also demonstrates the inaccuracy of the applicants modelling relative to the contours in the RFI. This shows that at my property the daa modelling is more likely to be 2dB different to measured reality.

Furthermore, the number of people that are Very Significantly or Profoundly affected by night noise as a result of the proposed Relevant Action is astonishing. For the 2035 +1dB scenario Table 29 of the applicant's report shows that 515 people will be very significantly affected and 156 people will be profoundly affected.

Based on the information in the documents I and my family will be profoundly affected. Referring to the EPA document from 2022 *Guidelines on the information to be contained in Environmental Impact Assessment Reports* I found Table 3.4 which is reproduced here.

Table 3.4 Descriptions of Effects

Quality of Effects It is important to inform the non-specialist reader whether an effect is positive, negative or neutral.	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/Adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Describing the Significance of Effects 'Significance' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see *Determining Significance*).	**Imperceptible** An effect capable of measurement but without significant consequences.
	Not Significant An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
	Very Significant An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics.
Describing the Extent and Context of Effects Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.	**Extent** Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
	Context Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

The profound effect I will suffer as a result of this relevant action is "An effect which obliterates sensitive characteristics.". My home will be obliterated by night-time noise and profound night noise impacts.

How can this be reconciled against the original grant of permission for the North Runway by An Bord Pleanala where the decision to grant permission included the following statement,

(l) 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.

This relevant action will not only introduce a significant deterioration in noise conditions to many areas in the vicinity of the airport it will profoundly obliterate the peaceful night-time environment that my family previously enjoyed. There can be no option but to refuse this permission on the basis that it fundamentally alters the conditions on which the North Runway was permitted in the first place. Had the applicant presented such profound negative impacts during the original planning application the entire North Runway project would havebeen rejected. Applying this logic, it should be refused now.

3.0 BASELINE YEARS ASSUMED IN THE ASSESSMENT

The third and final point in the RFI is regarding the baseline year chosen for the assessment. The applicant was asked to comment on the following

a) the baseline figures for 2019 were not used for the purposes of analysis.

b) When prior to 2018 were the annual and 92 day summer period numbers of ATMs last more than 25% below those in 2018, and

c) If the numbers of ATMs were last more than 25% below those in 2018 after the Northern runway came into use, what would be the difference in terms of the number of dwellings and persons likely to experience an increase in L_{night} to over 50 dBA and 55 dBA compared to the numbers presented in the EIAR.

The response to part a) of the request is brief and does not provide a very clear rationale for why 2019 was not chosen.

One obvious reason why the applicant may have chosen not to use 2019 is that in that year Dublin Airport carried more than the permitted 32million passengers at the airport. This breach of a planning condition that is attached to the grant of permission for Terminal 2 could explain why the applicant chose not to use 2019.

Despite this choice t is notable that the Noise Abatement Objective (NAO) for Dublin Airport set by the Aircraft Noise Competent Authority (ANCA) does choose 2019 as the baseline. 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 is interesting to note that if ANCA adopted 2018 as the baseline year as the applicant has it would have made it next to impossible for the NAO to be met. Reducing the population exposure levels by 30% compared to 2018 would set a much more onerous target for the NAO. However, by choosing 2019 which was the busiest and noisiest year on record for Dublin Airport the NAO objectives are more achievable.

In relation to parts b) and c) of the RFI the applicant presents in Table 43 the population exposed to different night noise levels for a variety of scenarios, including a scenario where the proposed relevant action has 25% fewer flights than the applicants forecasts in the EIAR. This table is reproduced here.

Contour L_{night} (dB)	Population Excluding Consented Developments					
	2025 Permitted	2025 Proposed	2025 Proposed Reduced	2035 Permitted	2035 Proposed	2035 Proposed Reduced
40	160,430	168,472	92,902	66,841	112,987	63,987
45	31,419	46,331	19,969	19,626	29,900	13,827
50	9,972	8,766	4,152	2,852	6,390	2,935
55	315	1,463	233	212	1,197	145
60	48	80	19	13	41	10
65	0	0	0	0	0	0

Table 43: Exposed Population at Night by Scenario and Contour

In analysing this table it is worth noting that when the applicant presents a "Permitted" scenario that will apply the restrictions under Condition 5 of the current North Runway planning permission. In other words, the permitted scenarios only have an average of 65 flights per night at the airport.

Of course, this is not something that is actually happening at Dublin Airport. In fact Table 41 in the applicants document details the actual number of night time flights at Dublin Airport in the years between 2014 and 2018. The table is reproduced here.

Year / Scenario	Night Movements	
	Annual	Summer
2018	27 ,896	8,755
2018 minus 25%	*20,922*	*6,566*
2017	27 ,287	8 689
2016	2 4,753	7800
2015	22,546	7073
2014	19,576	6253

Table 1: Past Night Movements

Dividing the summertime night movements by 92 will determine the average number of night-time flights in each year as follows:

- 2014 - 68
- 2015 - 77
- 2016 - 85
- 2017 - 94
- 2018 - 95

It is also known that in 2023 the average number of night flights for the summer period was of the order of 112. In the 11 years since 2014 the number of night flights at Dublin Airport has increased by 165%. There has been no attempt by the applicant to comply with Condition 5 since the North Runway opened. The summer 2024 slot allocation process has given theapplicant the same number of night flights for 2024 as they had in 2023.

Therefore, the permitted scenarios presented in the EIAR are fiction and do not represent reality. The applicant has not complied with the conditions it seeks to remove. It is therefore now applying for retention and the current application should be declared invalid.

4.0 SUPPLEMENTAL EIAR CHAPTERS

In addition to the response to the RFI the applicant has also submitted supplemental EIAR chapters. The applicant describes the changes addressed in the supplemental EIAR chapters as follows:

1.2 Changes addressed by this EIAR Supplement

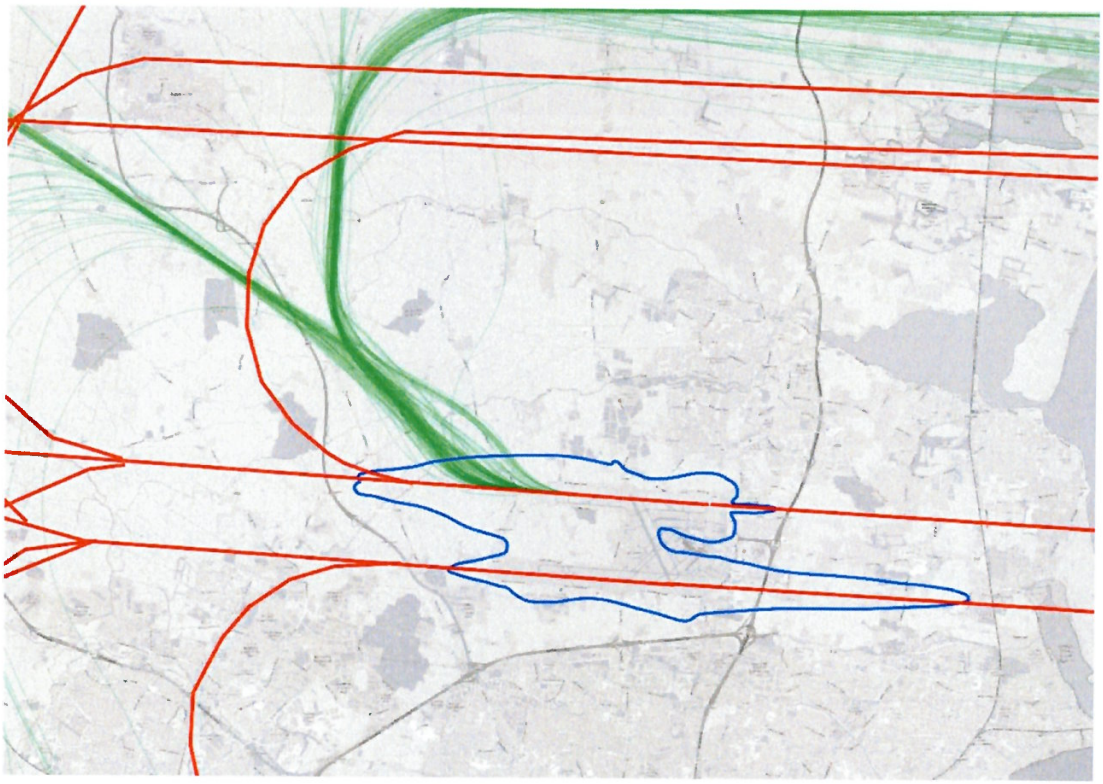
1.2.1 The Applicant has identified a number of changes that have taken place since September 2021 that could affect the findings of the environmental assessments presented in the September 2021 EIAR. These changes include:

- 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.

4.1 Flight Paths

The first item on this list is flight paths. The applicant is confirming here to the inspector that changes to the flight paths require a change to the EIAR submitted. This is obvious as when the flight paths change the noise impacts change.

However, the applicant fails to point out that the flight paths they are now presented as being permitted are in fact significantly different to those used for the original North Runway EIS in 2004. The following image illustrates this.



Current Flight Paths (Green) vs original EIS flight paths (Red). The current noise insulation scheme (blue line) is based on straight flight paths

Logic would therefore dictate that if a new EIAR is required for differences in flight paths since the Relevant Action was first submitted to Fingal County Council then a new EIAR is also required to assess the i mpact of changing the original 2004 EIS flight paths.

Clearly changing the 2004 EIS flight paths will result in a change to the noise contours being calculated using those flight paths. As a result, there are now areas being overflown by North Runway departures to the west which were never assessed in the original EIS. To illustrate this the following images present first the original EIS $L_{Aeq,16hr}$ noise contours for the 2025 scenario[2] followed by the $L_{Aeq,16hr}$ contours for the proposed development in 2025 as part of the supplemental EIAR[3]. The subsequent images present comparisons of the 63dB $L_{Aeq,16hr}$ and 54dB $L_{Aeq,16hr}$ noise contours with the noise contours from the supplemental EIAR for the 2025 scenario overlaid with the original EIS 2025 noise contours produced.

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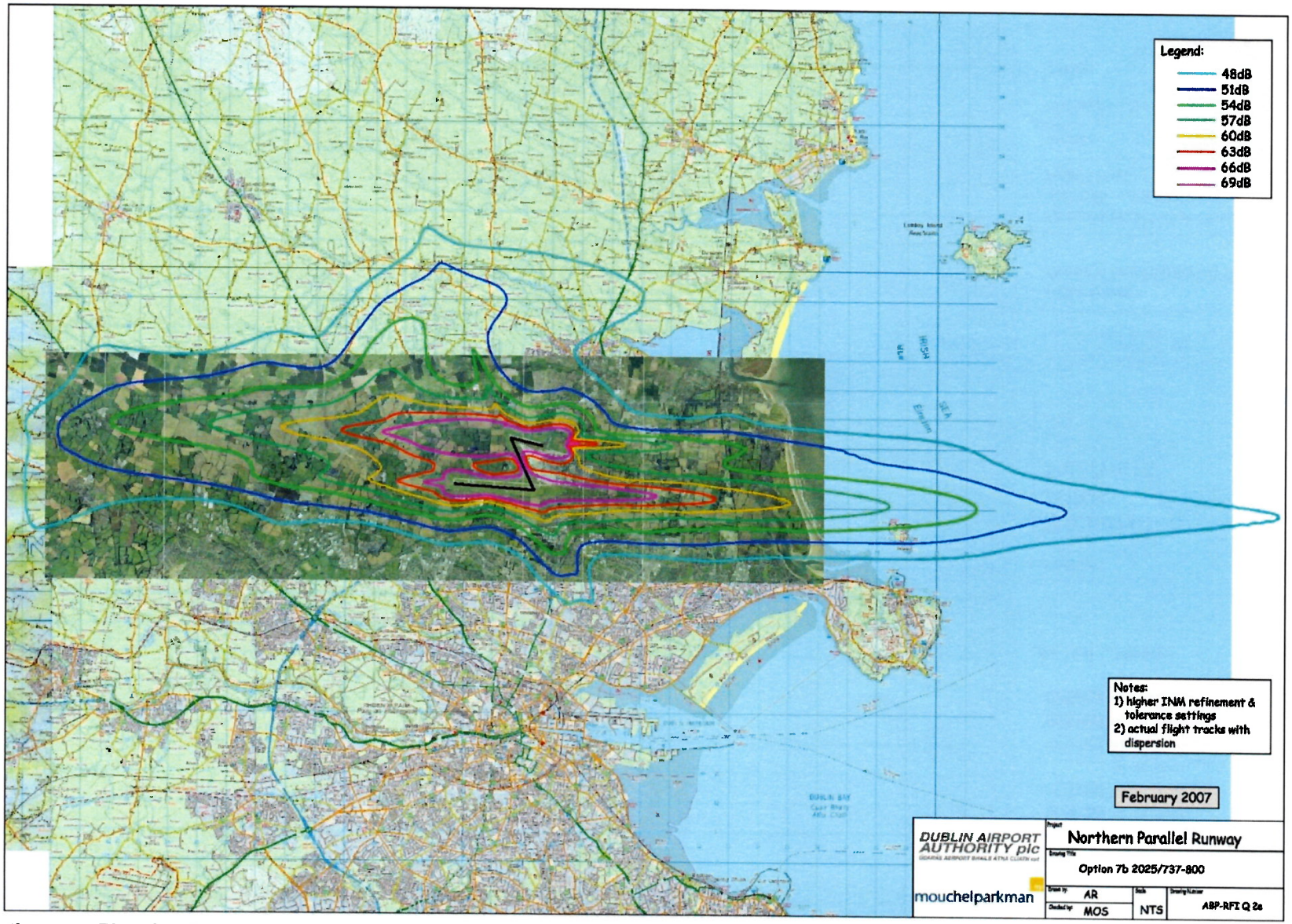
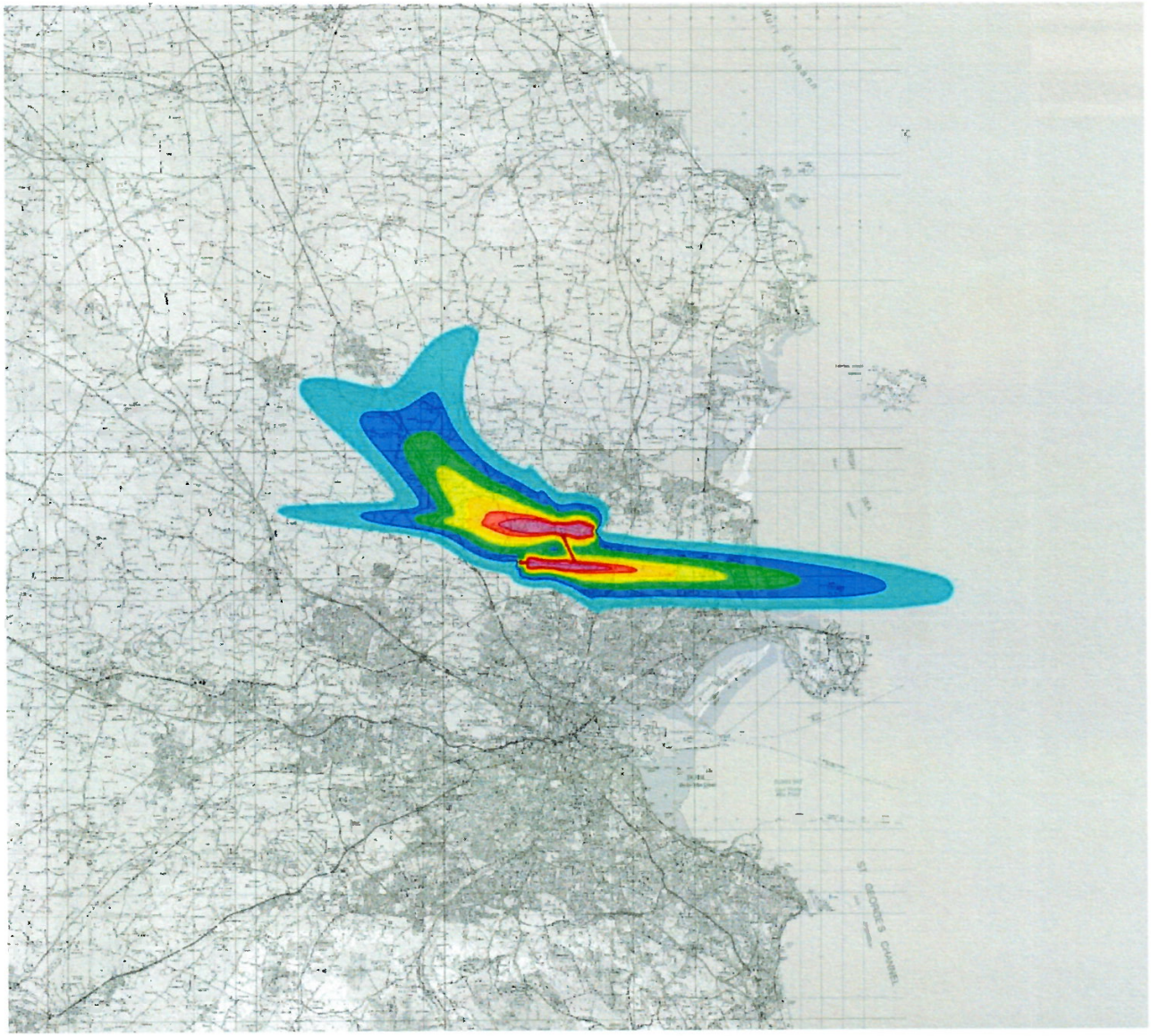
2 As submitted in March 2007 to ABP in the document Reponse to Information Request by An Bord Pleanala of 9th January 2007 An Bord Pleanala Reference: PL 06F.217429

3 Figure 13C-11 of the Supplementary EIAR submitted in September 2023


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
mouchelparkman
Northern Parallel Runway
Option 7b 2025/737-800
AR
MOS
NTS
ABP-RFI Q 2a



CYAL50218188
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LEGEND:

- 51 - 53 dB(A) $L_{Aeq,16h}$
- 54 - 56 dB(A) $L_{Aeq,16h}$
- 57 - 59 dB(A) $L_{Aeq,16h}$
- 60 - 62 dB(A) $L_{Aeq,16h}$
- 63 - 65 dB(A) $L_{Aeq,16h}$
- 66 - 68 dB(A) $L_{Aeq,16h}$
- 69+ dB(A) $L_{Aeq,16h}$

Rev	Date	Description	Initials

REVISIONS

Bickerdike Allen Partners
Architecture Acoustics Technology
121 Salisbury Road, London, NW6 6RG
Email: mail@bickerdikeallen.com T: 0207 625 4411
www.bickerdikeallen.com F: 0207 625 0250

Dublin Airport
Change to Permitted Runway Operations

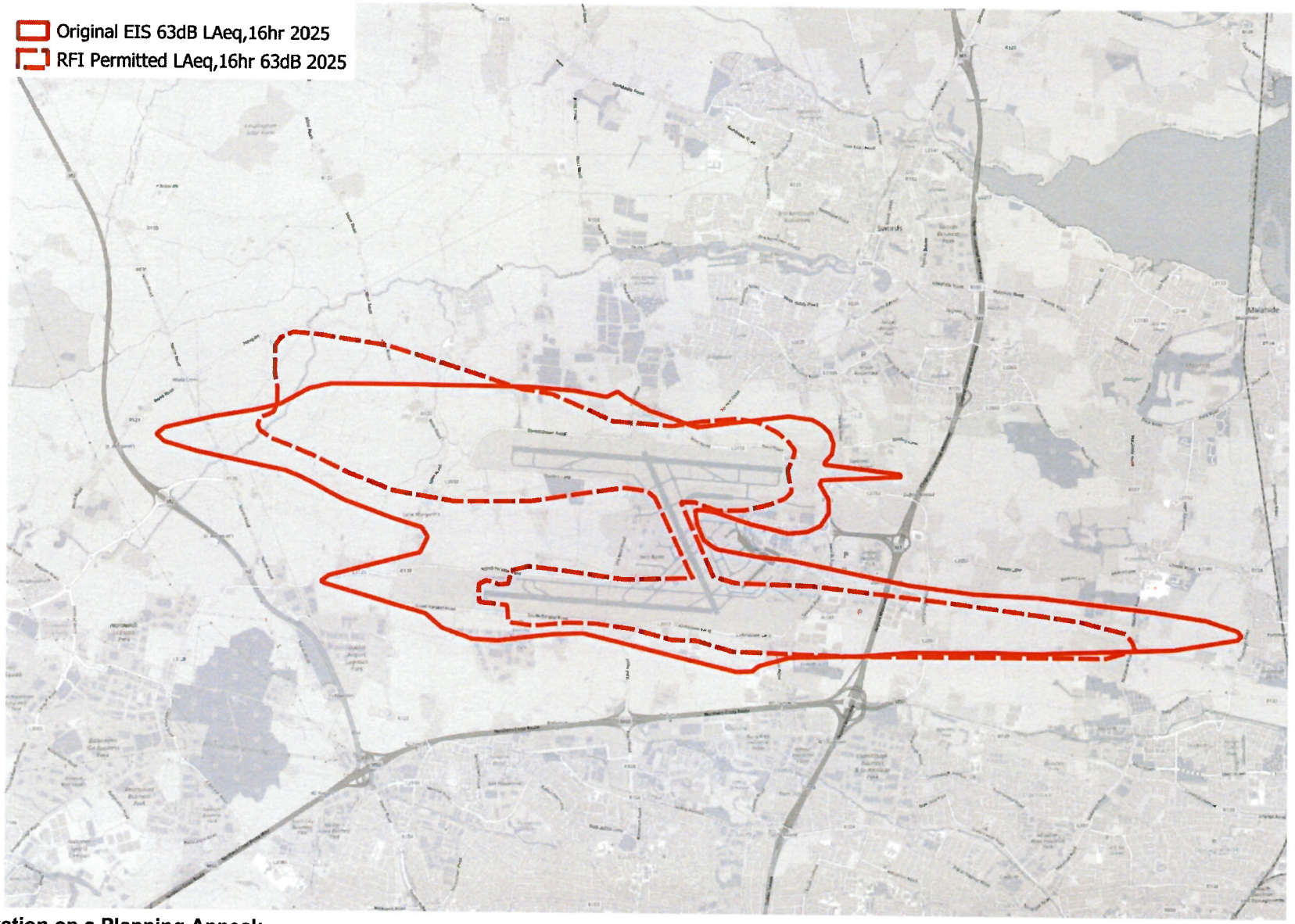
Forecast LAeq,16h Noise Contours
2025 Proposed Scenario
Figure 13C-11

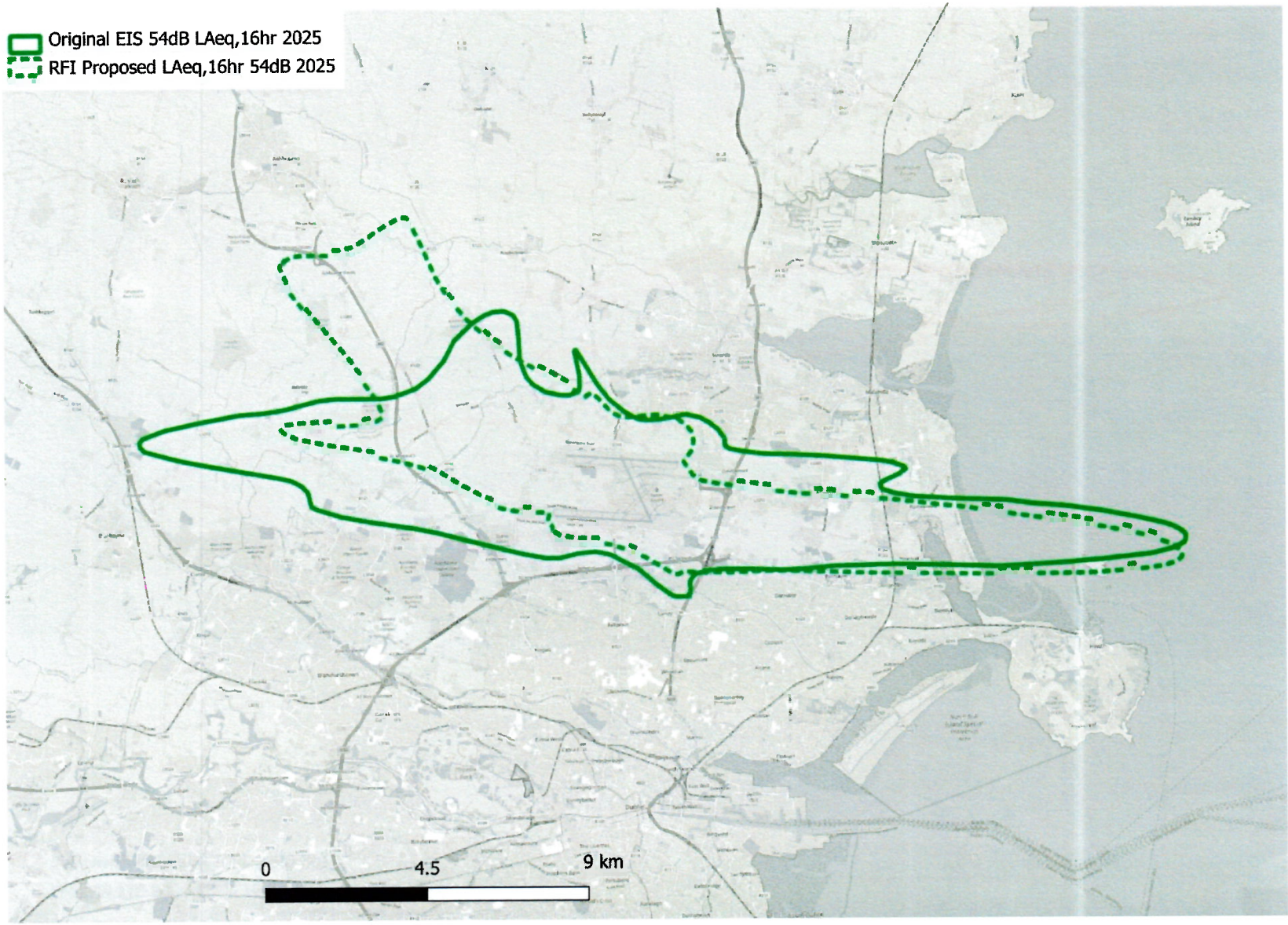
DRAWN: JC CHECKED: NW

DATE: September 2023 SCALE: 1:250000@A4

Drawing No:

A11267_19_DR027_2.0


Original EIS 63dB LAeq,16hr 2025
RFI Permitted LAeq,16hr 63dB 2025


Original EIS 54dB LAeq,16hr 2025
RFI Proposed LAeq,16hr 54dB 2025
0
4.5
9 km

The preceding images illustrate clearly how the Relevant Action proposal and the flight paths which this application presents as permitted, fundamentally change the areas that experience aviation noise from North Runway activities.

There is no presentation of the significance of the noise increase as a result of these new flight paths. Instead, the applicant presents various "Permitted" scenarios in the EIAR which also use these new flight paths.

There is a fundamental error in the applicant's approach to determine the significance of the proposed development. They are comparing "Permitted" to "Proposed" scenarios that both use the new flight paths that are different to the paths used in the original EIS.

This underestimates the significance of the change in noise environment for all communities and dwellings under the new flight paths, including my own home.

4.2 Accuracy

The applicant has not provided adequate information to validate the accuracy of their noise calculations. Appendix 13B of the Supplementary EIAR discusses how the air noise model was validated by comparing calculated levels to measured levels at three fixed Noise Monitoring Terminals (NMT) namely 1, 2 and 20 which additional data from an unnamed mobile NMT that was placed under the North Runway flight paths.

This exercise is a revision of an earlier exercise carried out in the original EIAR submitted with the Relevant Action application.

A few points of note here,

- NMTs 1, 2 and 20 are located under the flight paths from the South Runway which are straight out and not banking severely.
- The mobile NMT is in an unknown location. No data is presented in the EIAR for measurements at this location.
- Table 13B-12 presents modifications to the source emission values for the aircraft used in the model, separated into arrivals and departures.
- It is interesting to compare the modifications in the supplementary EIAR to those presented in the EIAR under appeal which were presented in Table 13B-15 of that EIAR. Note that in the original EIAR the modifications were determined using NMTs 1, 2 and 20 also.
- The modifications increase by up to 4.1dB for some aircraft types (A320neo) indicating that the addition of the mobile NMT under the North Runway flight path is having a significant impact on the modifications required to the aircraft noise model.

Table 13B-15 Modifications to AEDT Default Assumptions

	Arrivals		Departures		
Aircraft Type	AEDT Type	Adjustment (dB)	AEDT Type	Profile	Adjustment (dB)
A306	A300-622R	-3.1	A300-622R	30KFT	+0.6
A319	A319-131	-1.4	A319-131	30KFT	+0.9
A320	A320-211	-0.7	A320-211	USER	-1.3
A320neo	A320-211	-2.0	A320-211	USER	-3.2
A321	A321-232	-0.4	A321-232	USER	-0.5
A332	A330-301	-1.3	A330-301	30KFT	-1.1
A333	A330-301	-1.1	A330-301	30KFT	-0.8
ATR72	SD330	+1.5	SD330	30KFT [2]	+0.1 [3]
B734	737400	+0.4	737400	30KFT	-0.1
B738	737800	-2.7	737800	USER	-1.2
B738MAX	7878max	-3.0	7378max	USER	-1.5
B752	757RR	-0.4	757RR	30KFT	-2.3
B772	777200	+0.2	777200	30KFT	+1.5
B773	777300	-0.8	777300	30KFT	-2.4
B787	7878R	-0.3	7878R	30KFT	+0.1
E190	EMB190	-0.8	EMB190	30KFT	+0.5
RJ85	BAE146	-3.3	BAE 146	30KFT [2]	-1.6
DH4 [1]	SD330	0	DHC6	30KFT [2]	0

[1] The DH4 type was not validated due to insufficient results. The modelled AEDT types are based on BAP's experience of this aircraft at other airports where it operates more frequently, as the default AEDT suggested type of DHC830 typically leads to significant under-prediction of noise levels.

[2] Maximum altitude limited to AEDT calculated max for the AEDT type.

[3] This aircraft does not routinely depart over NMT 2 as it turns before reaching it, validation has therefore been based solely on measured results from NMTs 1 & 2.

Table 13B-12. Modifications to AEDT Default Assumptions

	Arrivals		Departures	
Aircraft Type	AEDT Type	Adjustment (dB)	AEDT Type	Adjustment (dB)
Airbus A300-600	A300-622R	-3.0	A300-622R	-1.4
Airbus A319	A319-131	-0.8	A319-131	+1.8
Airbus A320	A320-211	-0.6	A320-211	+0.2
Airbus A320neo	A320-271N	0.0	A320-271N	+0.9
Airbus A321	A321-232	-0.5	A321-232	+0.9
Airbus A321neo	A320-271N	+0.3	A320-271N	+1.9
Airbus A330-300	A330-301	-0.7	A330-301	-0.2
Airbus A350	A350-941	-0.4	A350-941	+0.9
ATR72	ATR72-212A	+3.5	ATR72-212A	+3.1
Boeing 737-400	737400	+0.6	737400	-1.0
Boeing 737-800	737800	-0.8	737800	0.0
Boeing 757-200	757RR	+0.1	757RR	+1.1
Boeing 767-300	767300	-1.8	767300	-2.9
Boeing 767-400	767400	+1.2	767400	+3.2
Boeing 777-200	777200	+0.5	777200	+4.0
Boeing 777-300	777300	-0.4	777300	-2.1
Boeing 787	7878R	+0.2	7878R	+2.7
Boeing 737MAX 8	7378MAX	-0.1	7378MAX	+1.3
Embraer E190	EMB190	-0.8	EMB190	+1.1

It is questionable that a single validation point under the North Runway flight paths is adequate to accurately determine the modifications required to achieve accurate results.

In addition, the noise monitoring carried out at my property (see report attached in Appendix 1) has found that the actual measured noise levels during the 92 day summer period in 2023 are significantly higher than the predicted 2025 contours in the supplementary EIAR. In my case the $L_{Aeq,16hr}$ value measured over the 92 days is 65dB. The supplementary EIAR assesses my property to be less than 63dB $L_{Aeq,16hr}$ in the 2025 scenario. Extract below from the report.

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.

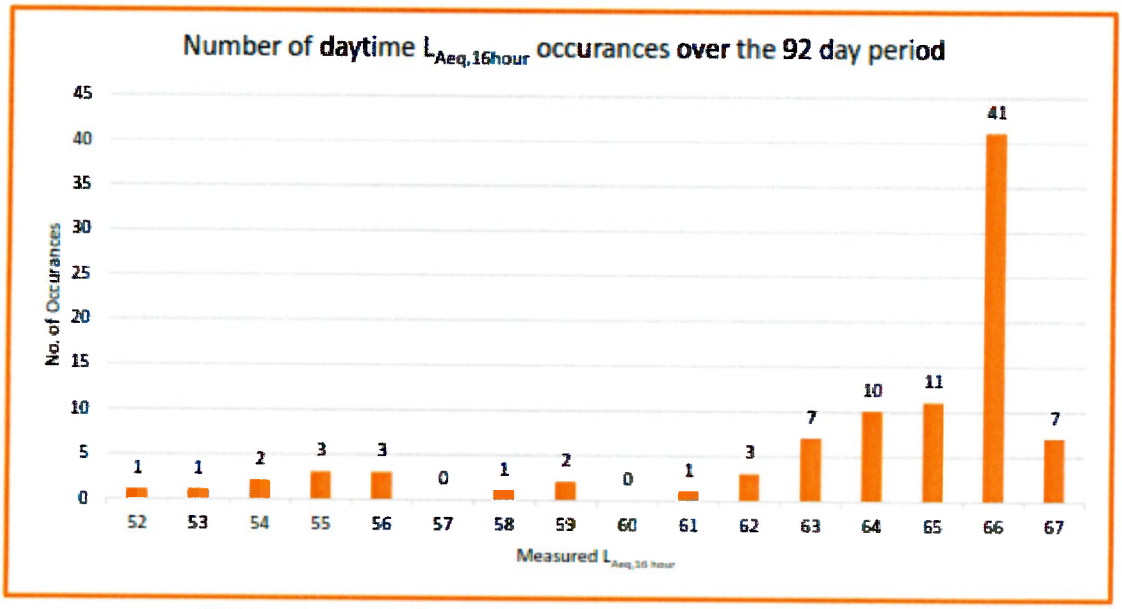


Figure 4: Number of daytime $L_{Aeq,16hour}$ occurrences over the full monitoring period

It is worth noting that the 2025 scenario is expected by the applicant to the worst-case year. A 2dB difference may seem small, however, as discussed in Section 2.0 of this submission the sensitive analysis shows that even a 1dB difference can result in many more people being significantly affected.

The applicant has had since August 2022 when the North Runway opened to carry out monitoring and justify the accuracy of their models. They have not done this despite the huge community reaction to the noise and the associated media coverage. It is implausible the applicant was not aware of the concerns being raised and yet they have done nothing to convince the planning authority that their predictions are accurate. I therefore ask the inspector to consider the validity of the noise predictions presented to the board and to refuse permission on the basis that sufficient accuracy cannot be determined.

4.3 Significance and Description of Effects

Referring to the EPA document from 2022 *Guidelines on the information to be contained in Environmental Impact Assessment Reports* I found Table 3.5 which is reproduced here.

Table 3.5 Checklist for In formationRequired toDescribe Effects[71]

CRITERIA	DETAILED QUESTIONS - TO DETERMINE WHETHER THE EIAR HAS:
a. **Magnitude and spatial extent of theeffects**	◢ cla rifiedthe size and scale of the effects? ◢ indicated the spatial extent of the effects (will some, m uchor all the areas be affected)? ◢ identified the receptors whichwi l be affected, indicatingtheir se nsitvity and signifcance?
b. **Nature of the effects**	◢ cla rifiedwhich part of the environment will be affectedand how significantly? ◢ identified the aspect of the environment a ffected? ◢ descnbed whether the effects are positive,neutral orn egative?
c. **Transbo undary nature of the effe cts**	◢ indicated the spatial extent of the transbou ndary effects (wil some,much or al of thej urisdiction be afected)?
d. **Intensity and complexity of the effects**	◢ qu antifed the a mount or intensty by which the character/q uality of anye nvironmental factorwi l change? ◢ described the degreeof change (e.g. impercep tible,slight or signi ficant)? ◢ Identifiedthe significance of the effect [e.g. profou ndor insig nifcant]
e. **Probabilityof the effects**	◢ estab lished the level of certainty of the assessment's findings? ◢ highlighted consequence that cannot be determined?
f. **Expected on set, duration ,frequency and reversibility of the effects**	◢ stated whether the effectswill be continuous, inte rmittent or occ asional? ◢ indicated whether the effects will be tempo rary,short, medium or longter m? ◢ highlighted irreversible effects?
g. **Cu mulation of the effects with the effects of other existing and/ or approved projects**	◢ descrbed cumulative effects? ◢ considered cumulative effects due tocumulation of effets with those of other projects that are existing or are ap provedbut not yet built or operation al?
h. **Possibilty of effectively reducing the effects**	◢ indicated whether the effects can be mitigated? ◢ stated whether compe nsaton is available, possibl eor acceptable?

This table provides a checklist for the information required to be included as per Annex III of Directive 2014/52/EU. Taking each step into account I have queried whether the EIAR has in fact answered eac hquestion.

Criteria	Detailed Question – to determine whether the EIAR has:
a. Magnitude and spatial extent of the effects	No comment – addressed in the EIAR
b. Nature of the effects	No comment – addressed in the EIAR
c. Transboundary nature of the effects	Impacts extend into Co. Meath, however, the assessment does not refer to the Meath County Development plan or the Meath Noise Action Plan.
d. Intensity and complexity of the effects	No comment – addressed in the EIAR
e. Probability of the effects	No discussion in the EIAR of the accuracy of the noise modelling. As per the discussion in Section 4.2 of this submission there are serious concerns around the accuracy of the applicant's models.
f. Expected onset, duration, frequency and reversibility of the effects	This is not discussed at all. It is not clear to the lay person that the effects will be permanent and irreversible.
g. Cumulation of the effects of other existing and/or approved projects	Cumulative effects on human health because of air noise, ground noise and air quality are not presented. Cumulative effect of air noise of the relevant action and the future development plans at Dublin Airport as described in Chapter 22 of the supplementary EIAR are not presented. There is a risk of project splitting occurring as a result and the true impact on communities being underestimated.
h. Possibly of effectively reducing the effects	Mitigation proposed by the applicant is limited to a grant towards insulating bedrooms only. There is no map indicating which properties will receive mitigation. There is no discussion on the effectiveness of this mitigation for the worst affected people (there are hundreds of profoundly affected people). There is no discussion of other mitigation measures. For example, the North Runway parent permission has a voluntary purchase scheme due to exposure to daytime noise, a similar

	scheme is required for those exposed to significant levels of night-time noise.

I ask the inspector to closely examine the EIAR submitted and where it is found that there is a lack of compliance with the required information to be contained in an EIAR that permission should be refused.

4.4 Lack of Suitable Mitigation

According to the EPA an EIAR should include,

> *'A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.'*

The applicant has offered no mitigation options to avoid, prevent or offset the significant adverse impacts. Instead, the applicant proposes two noise mitigation measures in their application,

- A grant towards insulating bedrooms
- Noise monitoring framework

Taking the second measure first, a noise monitoring framework will not reduce the noise level and is therefore simply not a mitigation measure. It should be disregarded as it is ineffective.

The insulation scheme is also considered inadequate for several reasons as follows,

- It is not providing adequate mitigation to remove the significant adverse impact
- Insulation is simply not effective to reduce the night-noise impacts for the very significant and profoundly affected areas, such as my property
- Insulation requires that homes are permanently sealed from the outside world, no longer can people enjoy sleeping with the windows open on a summers night
- Insulation may be adequate for some areas exposed to lower levels of noise, however, it is a grant rather than paying fully for the required insulation, why should homes that find themselves exposed to night noise when for decades the understanding was there that the North Runway could not be used at night have to contribute anything towards insulation?

The clear omission by the applicant is any discussion of what would be considered an unacceptable noise impact at night. Clearly by definition a profound noise impact will obliterate the sensitive characteristics of a person's environment. The only option to mitigate that level of impact is to move those people away from the noise.

The applicant has failed to consider a voluntary purchase scheme based on night noise or a relocation scheme where residents are moved from the noise to another similar home away from the high noise.

This failure to consider the option of offsetting the impacts as part of mitigation demonstrates how the EIAR submitted fails to meet the requirements of the EIA directive and the applicant should be refused permission.

4.5 Alternatives

The EIA directive requires an EIAR to contain,

> *'A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.'*

In this instance I contend that the applicant has failed to consider the reasonable alternatives for how the airport could operate with parallel runways.

Firstly, the Applicant's Do Nothing scenario is flawed as it is based on flight paths that are different to those assessed as part of the original EIS in 2004 and no subsequent application has sought to alter those flight paths or assess the environmental impact of changing the flight paths. Flight paths from a runway are fundamental to the runway operation and cannot be separated from the consented development in the way the applicant describes.

Secondly the Applicant's assessment of alternative modes of operation fails to consider the assessment of alternative flight paths, crucially failing to recognise the significance of how altering the flight paths used in the original EIS without any assessment of the environmental impact of that change is a serious flaw. One alternative that was presented in a PrimeTime investigation was to allow straight out departures to the West from the North Runway while ensuring that go arounds landing on the South Runway turned to the south to achieve the required separation between flight paths. This option is not even assessed in the EIAR despite the fact that it would allow the applicant to operate the runway as per the flight paths presented in the original EIS granted permission in 2007.

Thirdly, the Applicant fails to consider reasonable alternative mitigation measures as already discussed in Section 4.4 such as voluntary purchase, relocation etc.

The failure to consider reasonable alternatives comprehensively is a failure to meet the requirements of the EIA directive and the applicant should be refused permission.

4.6 Participation and Notification

The Relevant Action application has been made under Section 34C of the Planning and Development Act 2000. The decision to grant permission by Fingal County Council has been appealed under Section 37 of the Planning and Development Act 2000. However, as the original application was made under Section 34C the appeal must in addition to Section 37 also comply with Section 37R as defined in the Aircraft Noise (Dublin Airport) Regulation Act 2019[4]. Part 2 of Section 37R states (emphasis added in bold),

> *"(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."*

This requires that all persons that made submissions to the ANCA regulatory decision also be notified of the appeal process. It is unclear whether this has been completed correctly and there is anecdotal evidence of friends and neighbours who made submissions on the draft regulatory decision who have not been informed by the planning authority of the appeal process under Section 37.

The inspector can review the public consultation portal for the draft regulatory decision here https//con sult.fingal.ie/en/consultation/aircra ft-noise-consultation where there is a record of al l1382 submissions made.

In the event that these individuals were not informed correctly of the decisions of the planning authority and therefore missed the opportunity to submit an appeal there may be grounds for declaring the application invalid.

4.7 Oral Hearing

On 3rd October 2023 a letter was issued by An Bord Pleanala confirming that there would not be an oral hearing for this case, despite the request by many appellants for a hearing.

Following the receipt of the significant additional information submitted by the applicant, I request that the Bord reconsider this decision and hold an oral

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4 https://www.irishstatutebook.ie/eli/2019/act/12/section/12/enacted/en/html#sec12

hearing. It is clear to me that this particular appeal meets the criterion on the Bord Pleanala website for which an oral hearing may be held for,

> *"appeal cases which are complex or where significant national, regional or local issues arise"*

This appeal case is hugely complex, is having significant adverse impacts on a local and regional level and our communities deserve the opportunity to question the applicant directly at an oral hearing.

APPENDIX 1

NOISE MONITORING REPORT

WAVE DYNAMICS
ACOUSTIC CONSULTANTS

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.

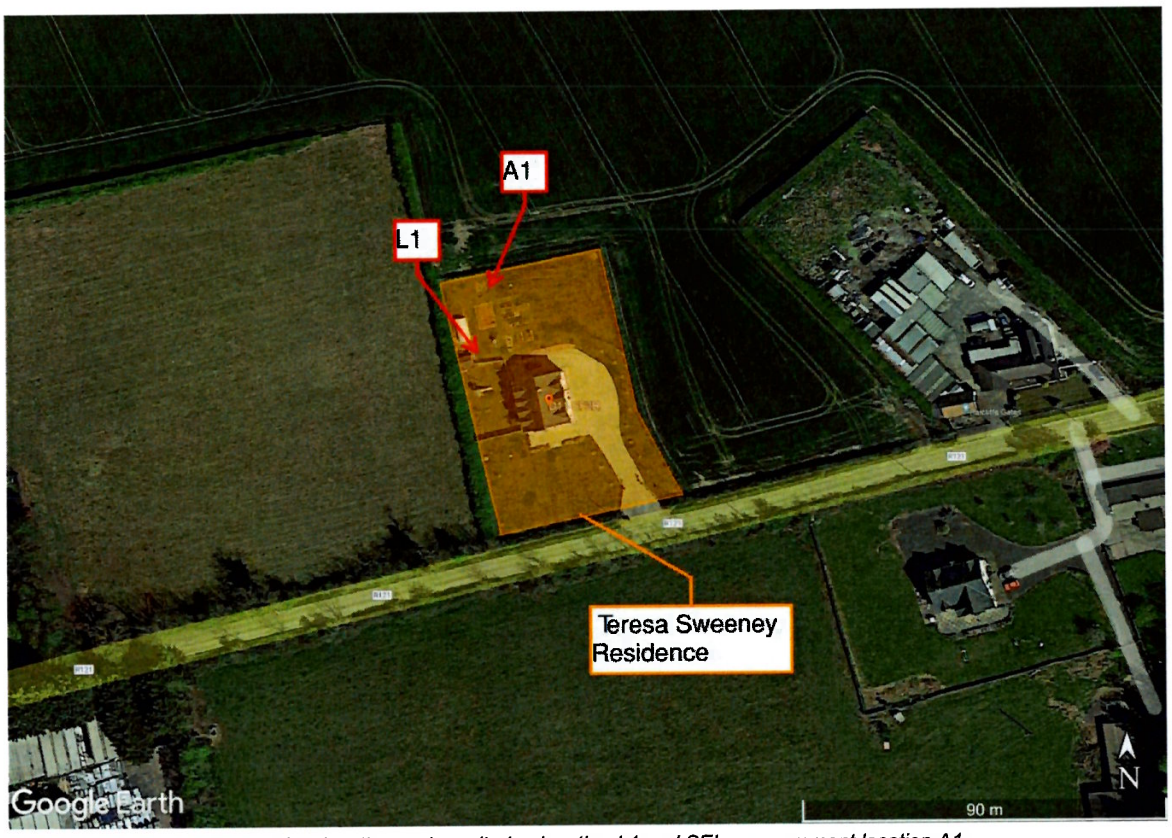

Figure 1: Site location and monitoring location L1 and SEL measurement location A1.

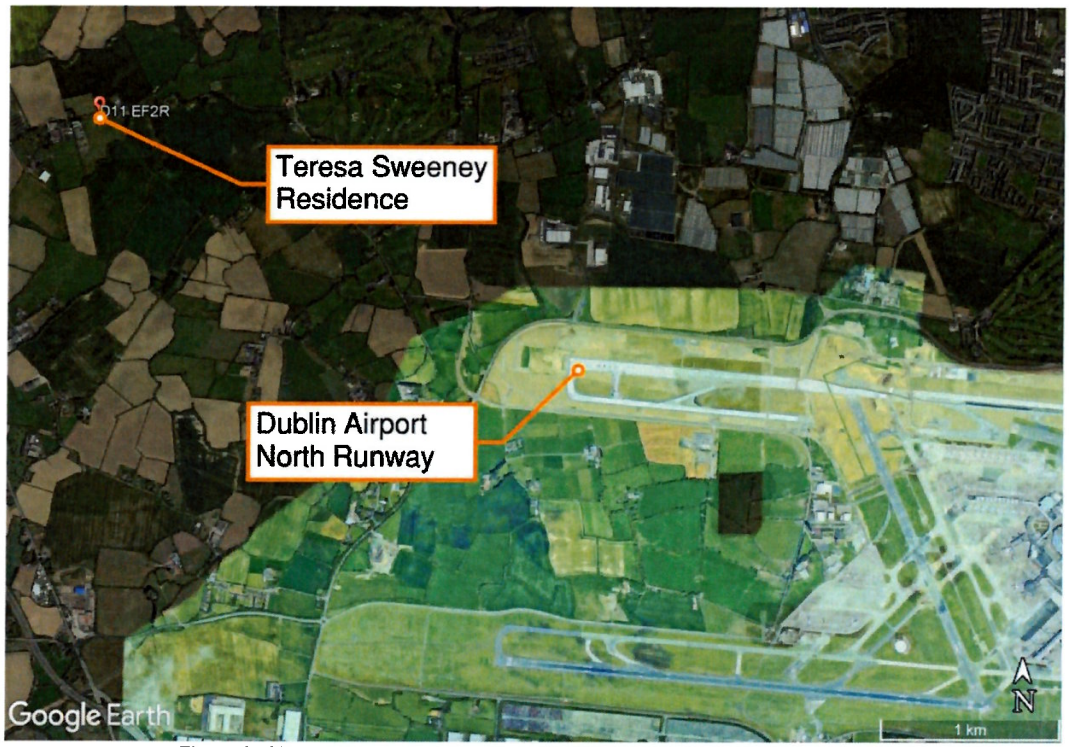

Figure 2: Site location in Relation to Dublin Airport and the new North Runway.

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	WDAsset 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.

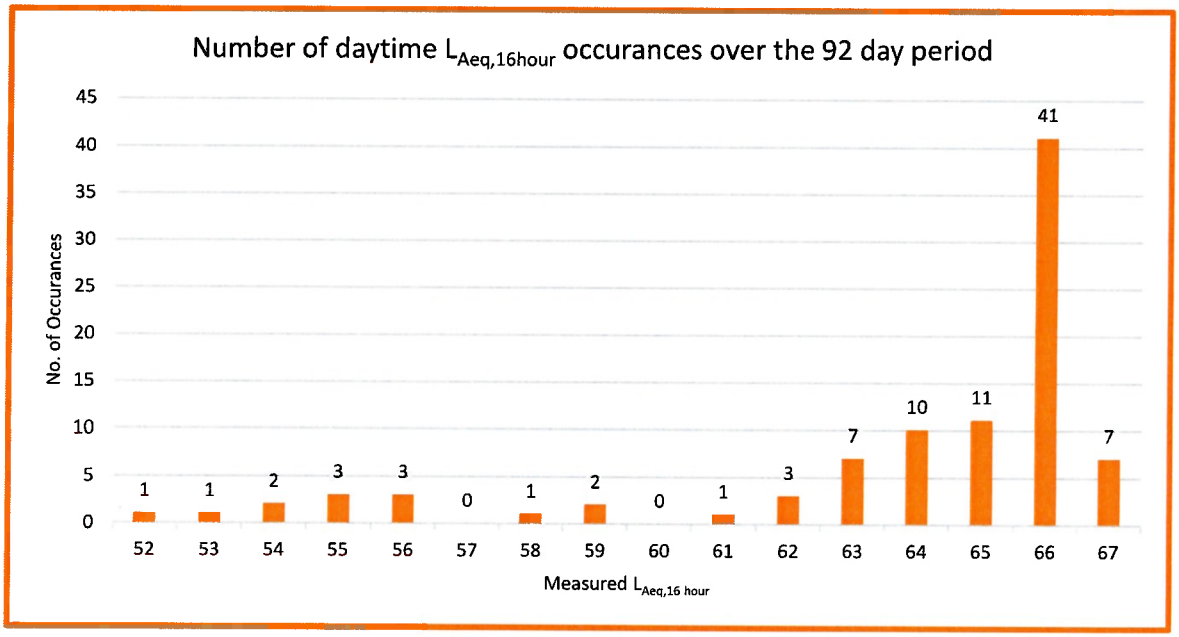

Figure 4: Number of daytime $L_{Aeq,16hour}$ occurrences over the full monitoring period

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

Measu rement				Aircraft Type	Measured NoiseLevels		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.

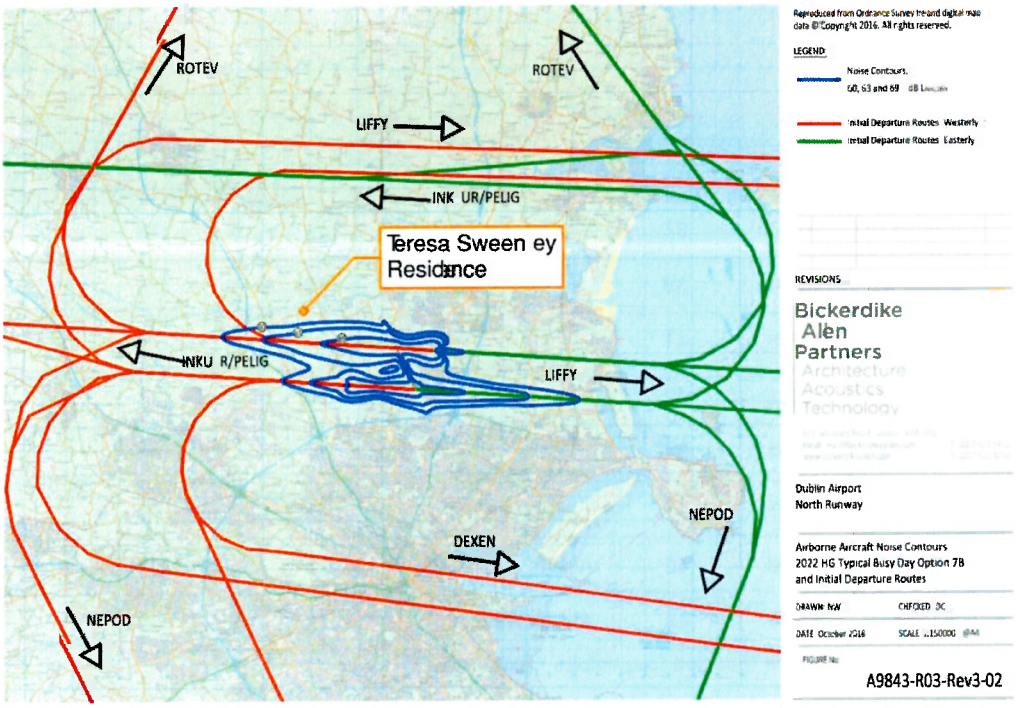

Figure 5: Predicted $L_{Aeq,16hour}$ (07:00 – 23:00) airport noise contours with North Runway in operation.

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.

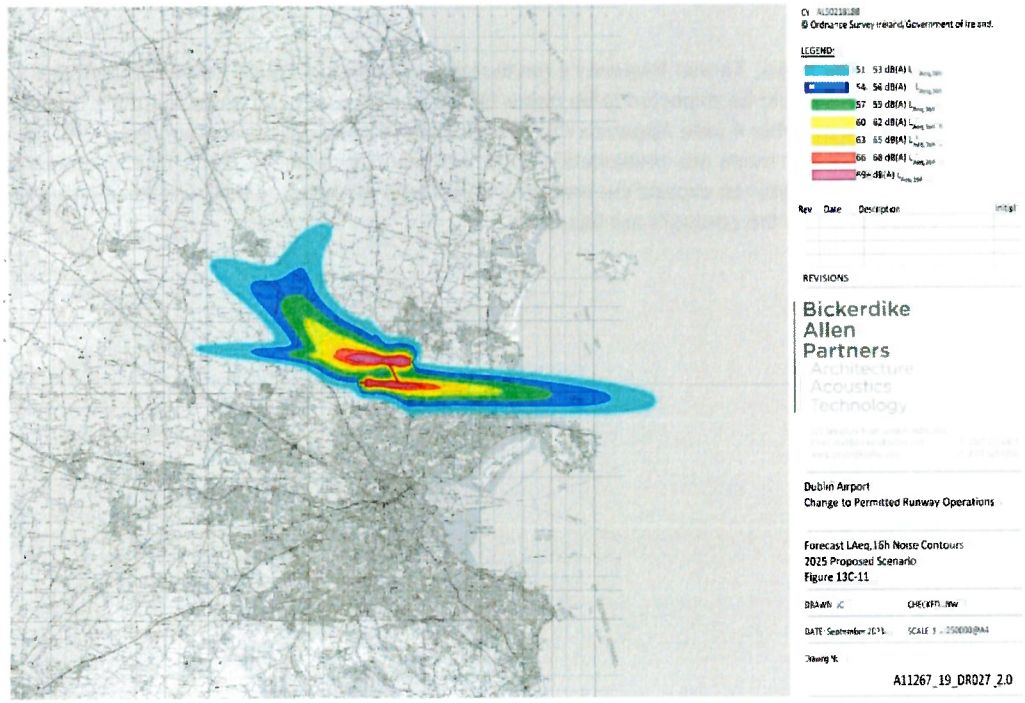

Figure 6: DAA predicted LAeq,16hour (07:00 - 23:00) airport noise contours for 2025.

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.

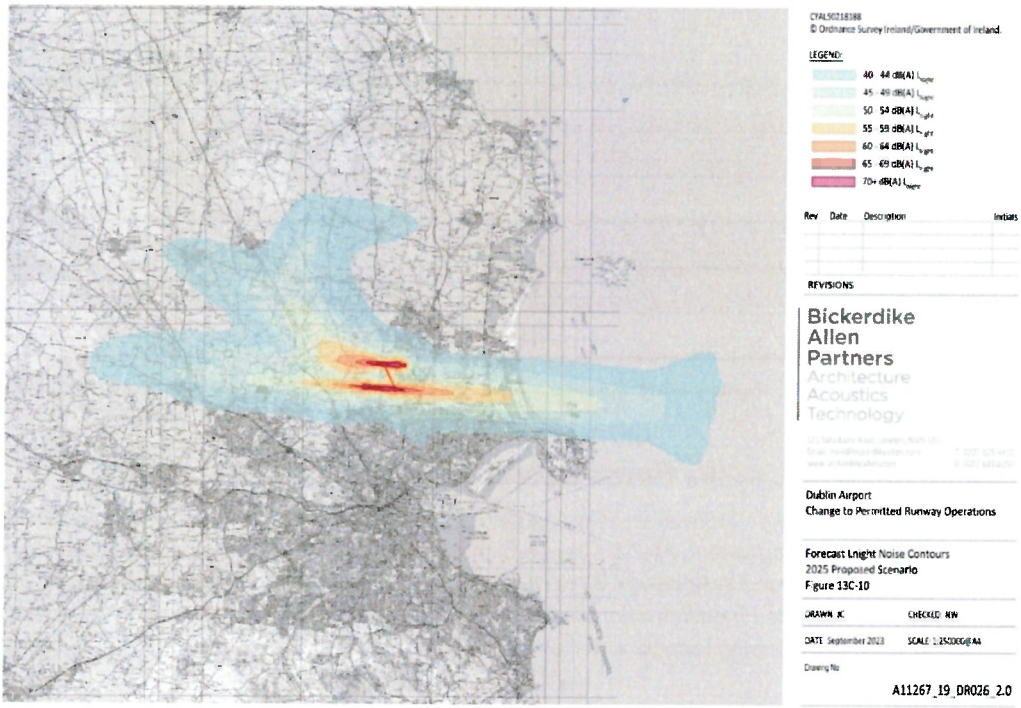

Figure 7: DAA predicted L_{night} airport noise contours for 2025.

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).

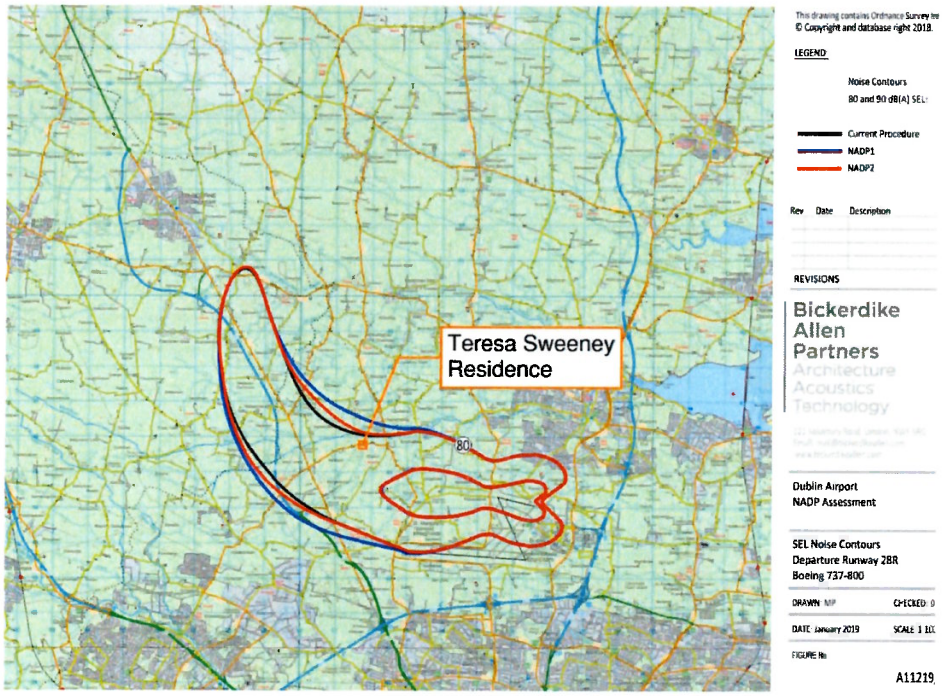

Figure 10: Predicted Sound Exposure Level noise contours for Boeing 737-800 for North Runway operation.

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).

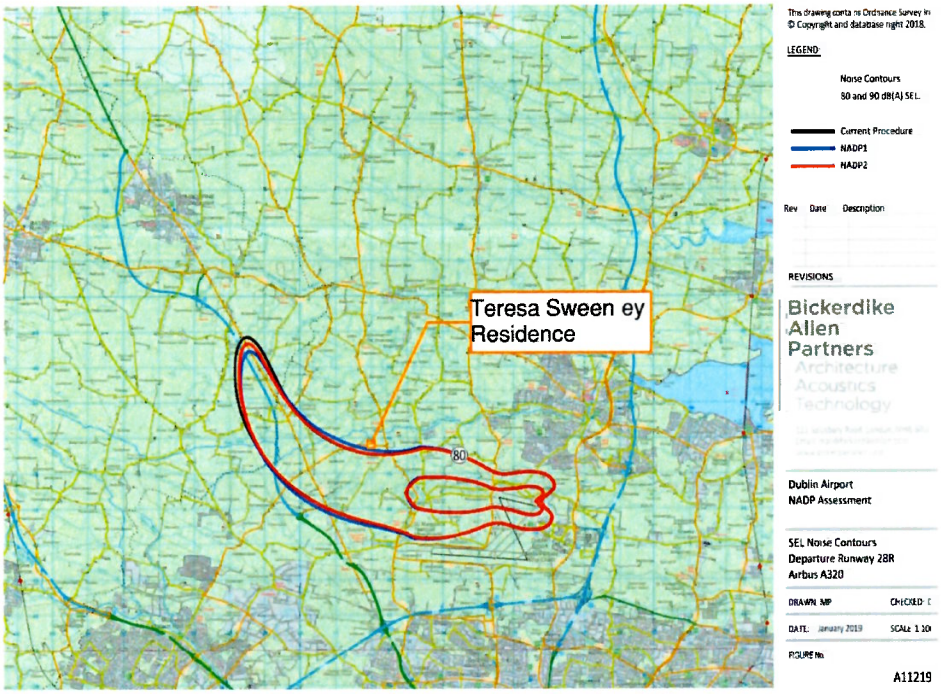

Figure 11: Predicted Sound Exposure Level noise contours for Airbus A320 for North Runway operation .

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).

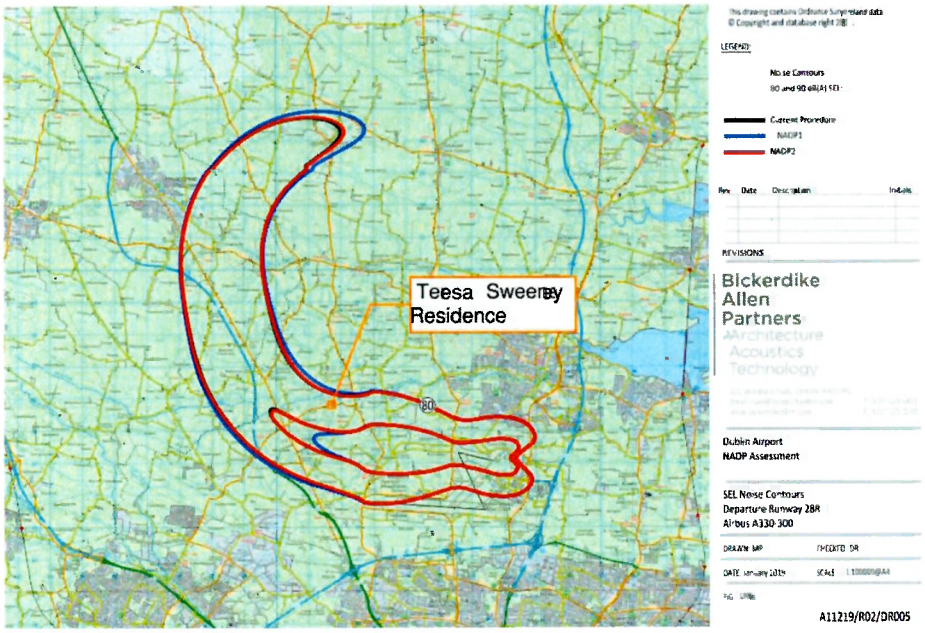

Figure 12: Predicted Sound Exposure Level noise contours for Airbus A320 for North Runway operation .

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.

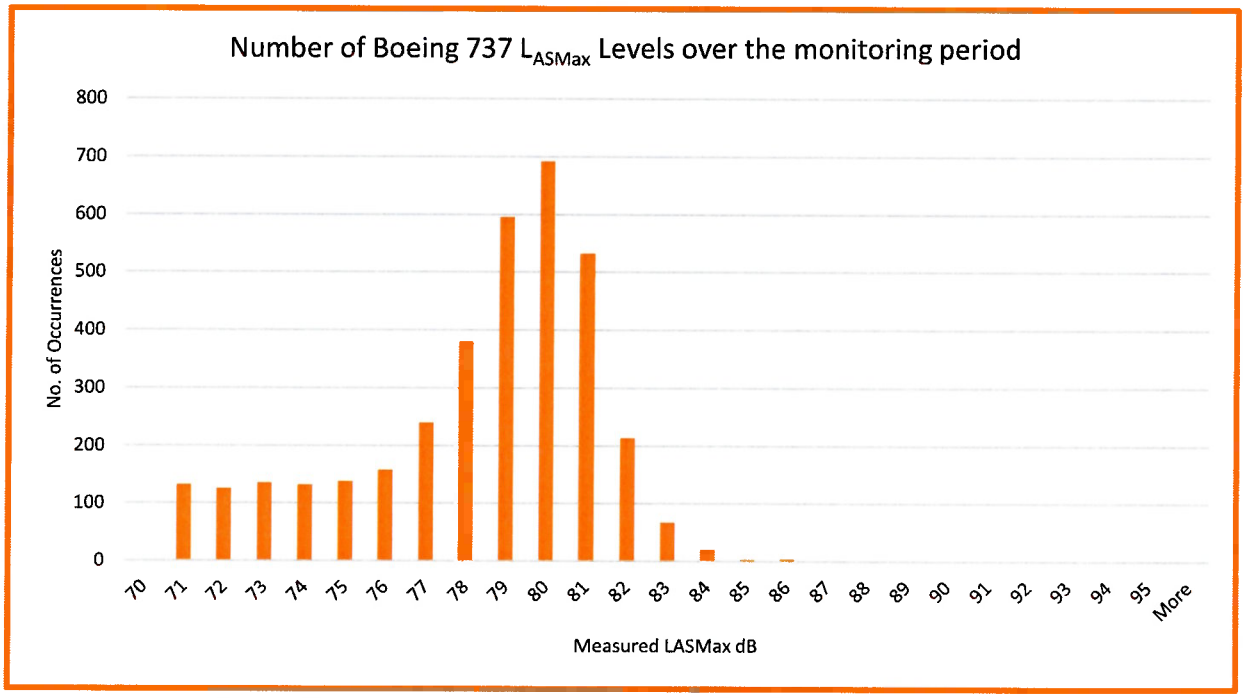

Figure 13: Number of Boeing 737 $L_{ASmax,1min}$ noise levels over the monitoring period

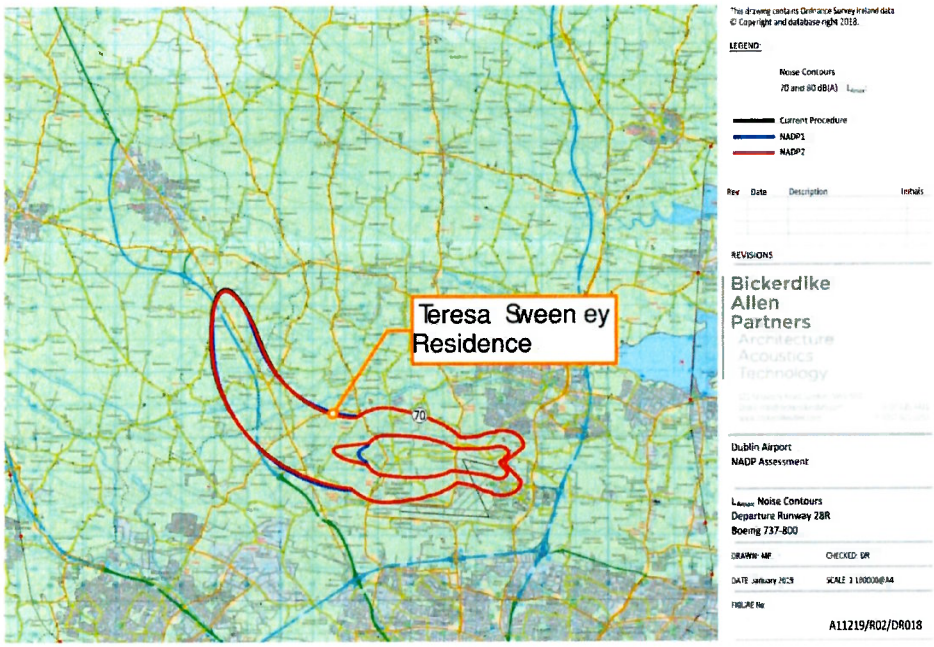

Figure 14: DAA predicted LAmax noise contours for Boeing 737-800

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.

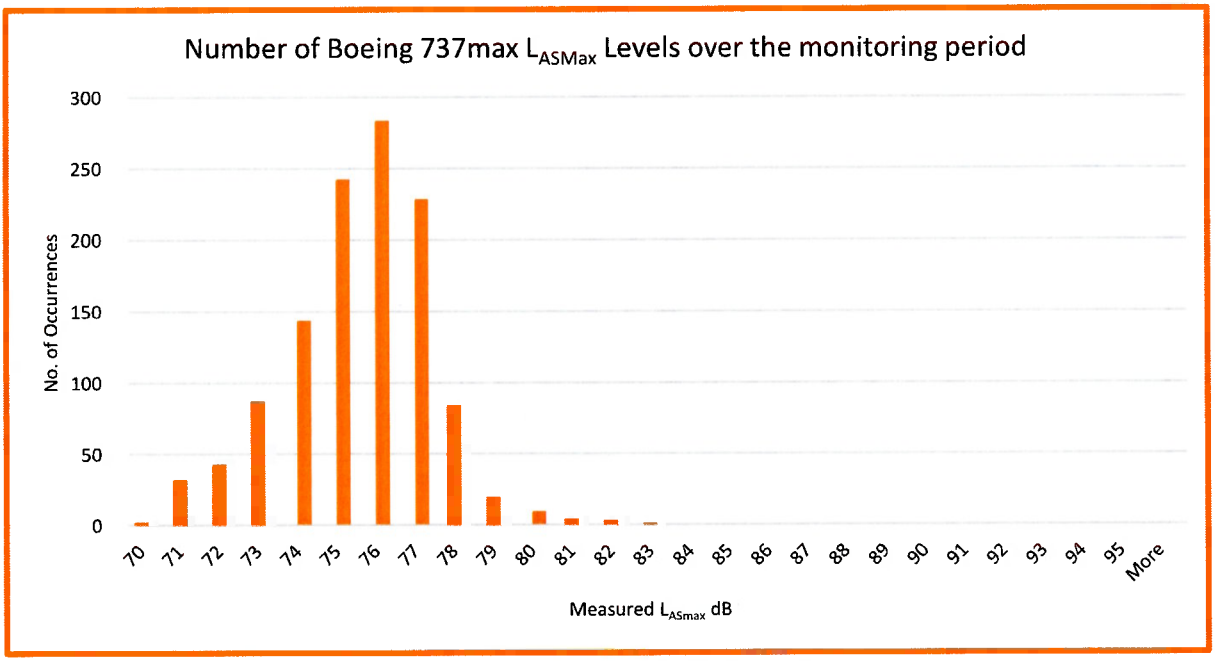

Figure 15: Number of Boeing 737-max $L_{ASmax,1min}$ noise levels over the monitoring period

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.

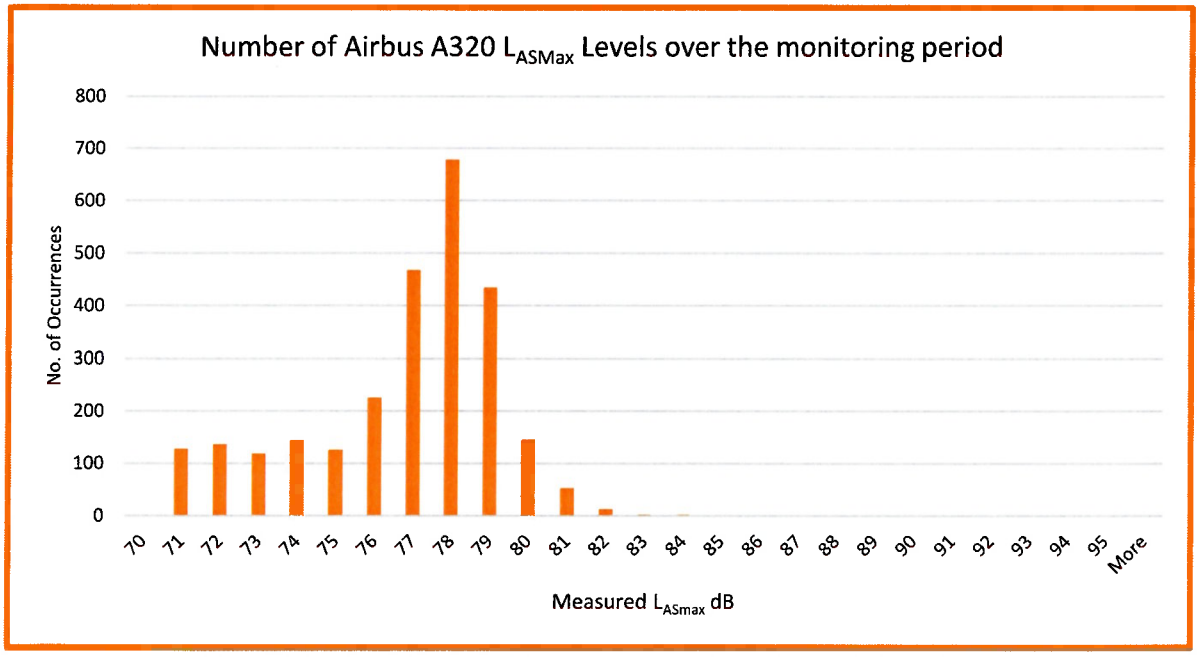

Figure 16: Number of Airbus A320 $L_{ASmax,1min}$ noise levels over the monitoring period

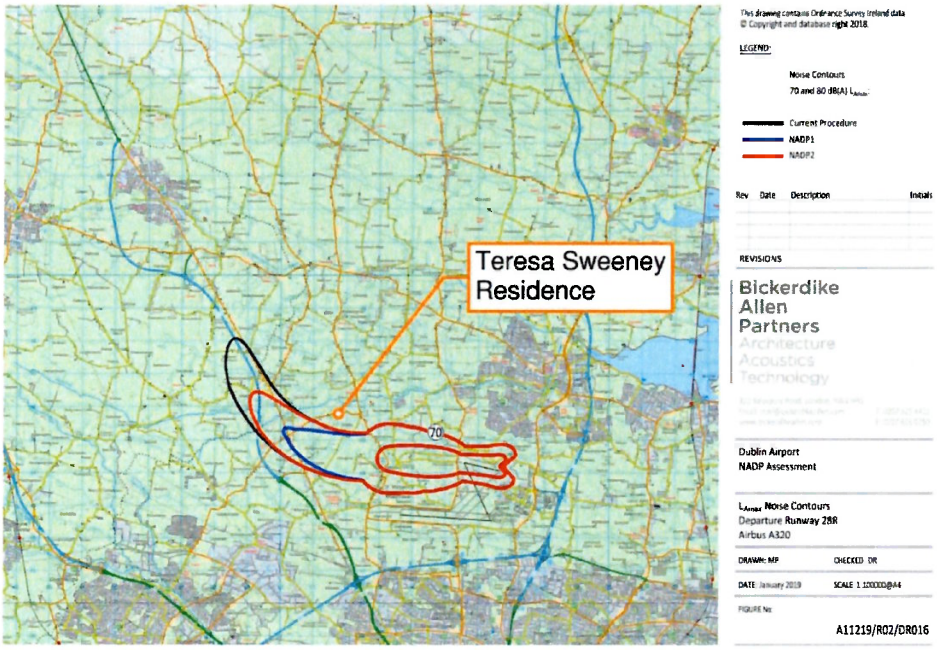

Figure 17: DAA predicted LAmax noise contours for Airbus A320

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.

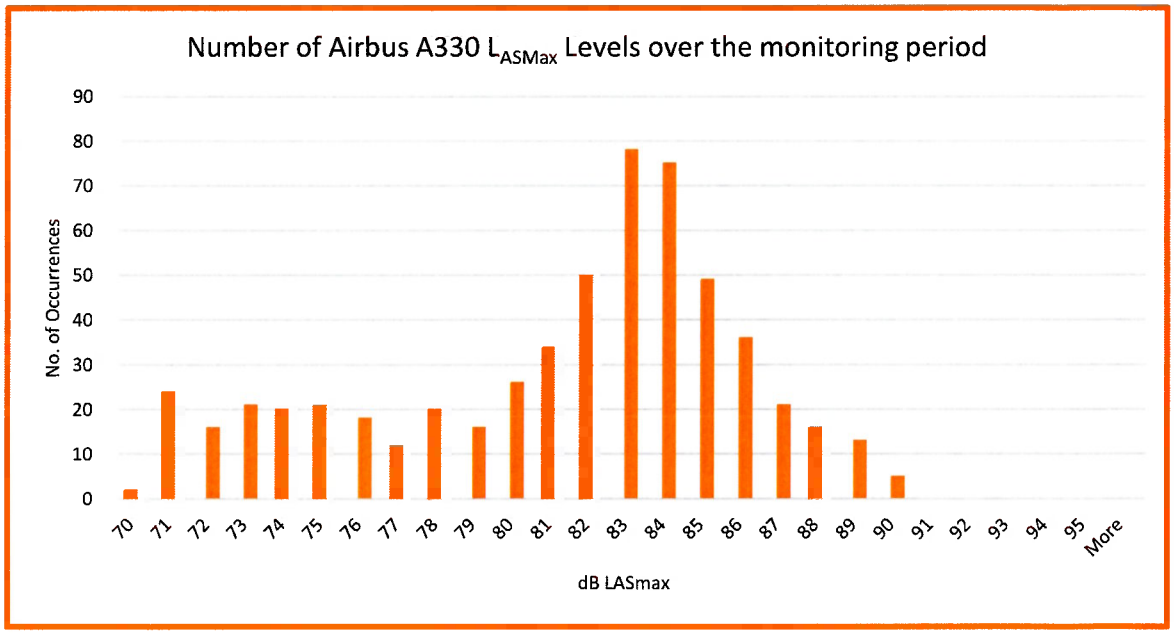

Figure 18: Number of Airbus A330 $L_{ASmax,1min}$ noise levels over the monitoring period

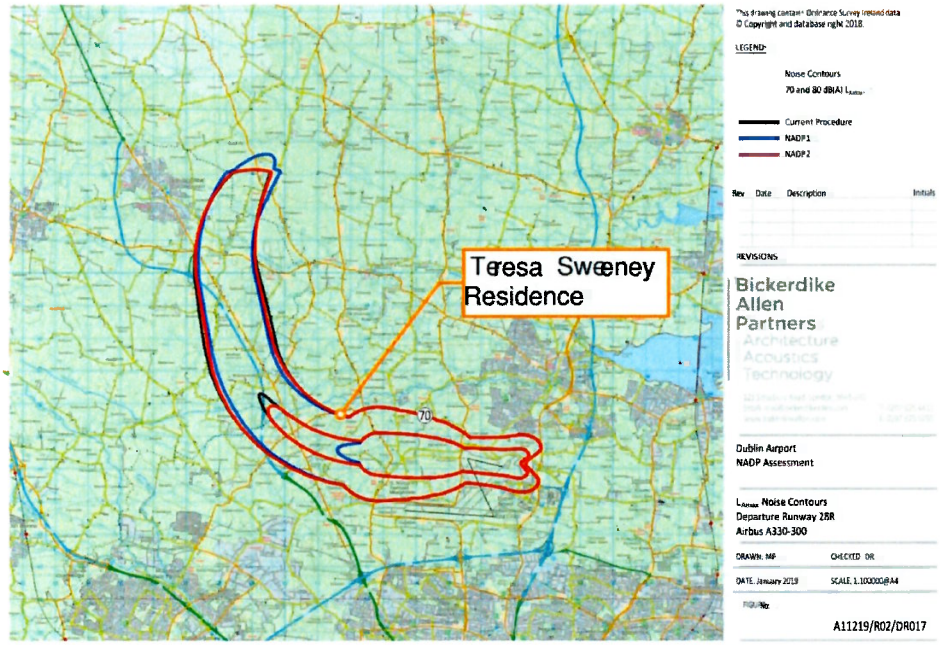

Figure 19: DAA predicted LAmax noise contours for Airbus A330

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 P eriod		
	Amual Day	Amual Eve	Annual Night	Annual 24hr	Summer Day16hr	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	StartTime	End Time	Average L^{Aeq}
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

Da te	Sta rt Time	EndTime	AverageL^{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