SECTION 131 FORM

File With _____ S. 3

Appeal NO: ABP 314485

TO: SEO

Defer Re O/H ☐

Having considered the contents of the submission ~~dated~~/ received 22/12/24 from Serena Taylor 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 issues

E.O.: _____ Date: 2/1/25

To EO: _____

Section 131 not to be invoked at this stage. ☐

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

S.E.O.: _____

S.A.O: _____ Date: _____

Date: _____

M _____

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

to: _____

Allow 2/3/4weeks – BP _____

EO: _____ Date: _____

AA: _____ Date: _____

S. 37

File With _____

CORRESPONDENCE FORM

peal No: ABP 324685

ease treat correspondence received on 22/12/25 as follows:

. Update database with new agent for Applicant/Appellant _____

. Acknowledge with BP 23

. Keep copy of Board's Letter ☐

1. RETURN TO SENDER with BP _____
2. Keep Envelope: ☐
3. Keep Copy of Board's letter ☐

Amendments/Comments

4. Attach to file
(a) R/S ☐
(b) GIS Processing ☐
(c) Processing ☑
(d) Screening ☐
(e) Inspectorate ☐

RETURN TO EO ☐

	Plans Date Stamped ☐ Date Stamped Filled in ☐
EO:	AA:
Date: 2/1/25	Date: 2.1.25

Daragh Cassells

From:	Serena Taylor <serenamptaylor@yahoo.ie>
Sent:	Sunday 22 December 2024 20:37
To:	Appeals2
Subject:	Submission on Draft Decision on the Relevant Action Case No.314485
Attachments:	WDA240601TN_2_A_01 Noise Survey and Assessment (Taylor).pdf
Follow Up Flag:	Follow up
Flag Status:	Completed

The Secreatary,
An Bord Pleanála,
64 Marlborough Street,
Dublin D01V02.

20th December 2024

RE: Submission on Draft Decision on the Relevant Action Case No.314485

Dear Sir / Madam,

As a committee member of St Margaret's The Ward Residents Group (SMTW) I am fully supportive and in agreement with the contents of the submission provided on behalf of the St Margaret's The Ward Residents Group to the Draft Decision by An Bord Pleanála dated the 11th September 2024 on the Relevant Action Case No. 314485.

I enclose technical notes pertaining to a noise assessment performed by Wave Dynamics Acoustic Consultants at my residence at Eir location K67TX89.

I am a married mother of four young children and I believe my family's health is suffering due the intrusion of these flight paths directly over my home. I have worked in the past as a Physiologist in Respiratory and Sleep Medicine at the Mater Private Hospital, Dublin and am au fait with the health implications on sleep from noise disruptions. My children are experiencing a disrupted sleep routine that will stifle their cognitive development and growth profile. My husband has been recently diagnosed with hypertension. It would appear that there is no protection afforded to the communities that are currently impacted nor any whole of government approach to resolving this travesty. Mr. Garvey, Consulatant Respiratory Physician and Directory of the Sleep Laboratory at St. Vincent's University Hospital is astute at recognizing the benefits of a night-flight ban for North Dublin and Meath. It is my personal belief, that a concept built around the principle 'as low as reasonably achievable' (ALARA) should be implemented in terms of night flights. No extension of operational hours should be considered in the current situation and as such An Bord Pleanála should simply refuse this part of the application.

It is evident that the daa has definitively not adhered to the Environmental Impact Assessment (EIA) attached to the 2007 planning conditions and whilst Dublin Airport Authority (daa) may advocate that this was due to safety considerations it is now becoming transparent that this is in fact **not the case.**

An Bord Pleanála **must seek opinion** and clarification from the Irish Avaitation Authority (IAA) and Air Nav as well as seeking an opinion from other European organisations responsible for airspace design and implementation of Standard Instrument Departures (SIDS) such as Eurocontrol. It would be reasonable to review the entire Dublin Airport Aerodrome to promote safe operations and a best practice approach. It would be my opinion that a rotationary system of flight paths over various communities adjacent to the airport may help protect human health by dispersing noise and air pollution.

Residential Capacity Limitation for Dublin

Our capital city, will be frustrated and limited in terms of future housing growth should this Relevant Action application become successful. If An Bord Pleanála grants this planning application, it will effectively allow flight paths that previously had no proper justification to be implemented and finalised. This represents a major problem for communities that were not adequately warned or consulted about these changes, leaving them vulnerable to significant impacts on their quality of life and more so, health concerns.

Onsite Visits to Impacted Homes.

A selection of homes should be visited during periods when noise exposure is at its worst. Attempting to assess this issue solely from a desktop position is both unacceptable and naive. The full magnitude of the problem cannot be truly understood without direct exposure to its impacts. While I acknowledge that daa representatives have visited homes to examine these concerns, I believe it is equally important for An Bord Pleanála and public health officials from the Department of Health to adopt a similar strategy. First-hand experience is essential to ensure informed and empathetic decision-making.

Lack of Oral Hearing

It remains perplexing why no oral hearing is being considered for the affected communities in this instance. The Metro Link project, spanning from Estuary to Charlemont via Dublin Airport, welcomed an oral hearing, ensuring transparency and meaningful community engagement. Given the significant and far-reaching impacts of these proposed flight paths, it is only fair and reasonable that the same opportunity be extended to those directly affected. An oral hearing would provide a vital platform for voices to be heard and concerns to be addressed in a fair and transparent manner.

Lack of Public Engagement / Christmas Deadline

There has been a severe lack of public communication and engagement regarding the Relevant Action. Setting deadlines around the Christmas holidays is a well-known tactic often used to limit public participation and reduce the ability of communities to respond effectively. This approach undermines transparency and fairness in the consultation process. Meaningful engagement requires adequate time, clear communication, and genuine opportunities for affected residents to voice their concerns. I am aware that many of my neighbours are simply unaware as to the opportunity to respond to the draft decision on the Relevant Action application.

Demonstrations and Protests

To date, there have been, I believe, three protests at Fingal County Council Offices, as well as one significant protest at the Dublin Airport Roundabout on the 1st of December 2024, with further demonstrations promised over the Christmas period and into the New Year. It is striking that coverage of the latter protest was notably limited on our national state broadcaster, despite the clear public interest in this issue. The public will not tolerate such a blatant attack on their basic human rights, including the right to a peaceful and healthy living environment. Additionally, the protest at Dublin Airport brought traffic to a complete standstill, serving as a real-life demonstration of how the current road infrastructure is already incapable of handling additional strain. This raises serious questions about the feasibility of any proposed expansion without significant infrastructural improvements.

Future Litigation

The cost to the state in these matters will be immense. There is a clear onus of responsibility on the state to actively limit legal disputes between state bodies, as such conflicts are not only financially burdensome but also undermine public confidence in our institutions. Furthermore, it is inevitable that personal injury claims, as well as nuisance cases, will be brought forward by affected residents if these flight paths are implemented without proper scrutiny and engagement. It is imperative that An Bord Pleanála does not, by way of this Relevant Action application, effectively grant new flight paths by default. To do so would make a mockery of the planning process and bring the entire system into disrepute. It is evident that the flight paths proposed in this application are the desired routes, strategically designed to maximise future capacity at Dublin Airport. However, such ambitions cannot come at the expense of public health, community well-being, and the integrity of the planning system.

Climate Costs

A recent article in *The Times* highlights the pressing need to address the environmental impact of aviation, emphasising that reducing flight volumes and limiting airport expansions are critical steps in combating climate change. Aviation currently accounts for around 2.5% of global CO_2 emissions, but its overall warming impact is estimated to be closer to 4% due to non-CO_2 effects like contrails. With Dublin Airport already exceeding its capacity limits and planning further expansion, the environmental cost cannot be ignored. Increased air traffic brings not only higher carbon emissions but also worsens noise and air pollution, impacting local communities in Ashbourne, Ratoath and beyond. To meet Ireland's climate targets and protect public health, prioritising sustainable transport policies and resisting unchecked airport growth must remain central to our national strategy.

Ireland faces significant financial penalties if it fails to meet its legally binding climate targets. Projections indicate that, without substantial reductions in greenhouse gas emissions, the country could incur fines ranging from €5 billion to as much as €20 billion by 2030. These penalties would result from non-compliance with both national and EU emissions reduction commitments. Additionally, missing these targets could necessitate purchasing surplus carbon allocations from other EU countries, further increasing financial burdens. Beyond monetary costs, failing to achieve climate goals would undermine Ireland's environmental credibility and hinder global efforts to combat climate change.

In conclusion, any extension to the hours of operation at Dublin Airport will force me to leave my home. I strongly advocate for a refusal of any extension to operational hours, and for the implementation of a noise quota along with a strict limit on the number of night flights, with as few night flights as possible.

Under no circumstances should An Bord Pleanála allow the sanctioning of the new flight paths, especially where there is a higher population threshold to be impacted and no mitigation measures currently in place. To approve such a proposal would be foolhardy from a legal standpoint, and would expose both the state and affected communities to unnecessary risks and harm. The interests of the public must be safeguarded, and any decision that disregards the well-being of residents is both unjust and legally indefensible.

Kind regards,
Serena Taylor BSc (Hons.) (Phys, Chem), MSc (Phys. Sci. Med), PGDip (Dist.) (Gastro)

References

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htt ps: //www.rte.ie /player /series/rising-tides--ireland-s-future-in -a-warmer-world /1000241 1-00-0000?epguid=IP10002407-01-0003 Watch from 35minute mark where presenter Philip Boucher-Hayes discusses Aviation in Ireland.
www.wrongwaydaa.com

WAVE DYNAMICS
ACOUSTIC CONSULTANTS

Technical Note

Project:	Masspool, Co. Meath, K67 TX89	**Title:**	Noise Assessment
Job Number:	WDA240601	**Prepared By:**	Sean Rocks
Date:	19/12/2024	**Reviewed By:**	James Cousins
Reference:	WDA240601TN_2_A_01	**Client:**	Serena Taylor

1 Introduction

Following the commencement of operations at the new North Runway at Dublin Airport in August 2022, Wave Dynamics, in partnership with Suono, were commissioned by Serena Taylor to carry out a noise impact assessment. This involved long-term noise monitoring (over 92 days) at Masspool, Co. Meath, K67 TX89, to measure aircraft flyover noise levels.

The survey aimed to evaluate the noise levels at Serena Taylor's residence following the commencement of flights from the North Runway. The North Runway has seen an increase in operational capacity since its initial soft opening. This assessment focuses on the summer 2024 operational procedures, which allow departures from the North Runway between 07:00hrs and 23:00hrs.

When the planning application for the North Runway was submitted by the DAA (Dublin Airport Authority) in 2007, the homeowner did not anticipate that this residence would be significantly affected by noise from departures. However, changes to the flight paths since the original 2007 proposals have resulted in the dwelling being exposed to considerably higher noise levels than expected under current operational procedures.

The primary goal of this assessment was to quantify the existing noise environment and measure the current levels of aircraft noise associated with the North Runway operations. These measured levels have been compared against the predicted noise levels from the DAA noise contours and standard industry criteria to assess compliance with the predicted noise impact on the dwelling from the 2007 planning application.

1.1 Statement of Competence

This assessment and report were completed 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.

The assessment and report were peer-reviewed 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

2.1 Monitoring Period

A noise survey was undertaken at the residence of Serena Taylor, Masspool, Co. Meath, K67 TX89 to quantify noise levels generated by aircraft operating at Dublin Airport. Unattended measurements were conducted at a single location (ST1) over the 92-day summer period, that being 00:00hrs on 16th June 2024 to 00:00hrs on 16th September 2024. This period has been chosen to align with the noise monitoring period used to generate $L_{Aeq,16hour}$ daytime and L_{night} noise contours to allow comparison with the Airport's noise assessments and data.

Attended noise measurements were also conducted at location ST2 from 09:28hrs to 13:12hrs on 3rd of September 2024. These attended measurements have been used to verify the unattended noise measurements and to highlight the noise levels experienced at the residence versus what was originally expected by the resident.

2.2 Site Description and Measurement Locations

The site located in Masspool, Co. Meath as shown in Figure 1 below. The area is in general agricultural land, with sporadic one-off residential dwellings and commercial properties. Dublin Airport is located to the residence's southeast, approximately 6km from the western edge of the North Runway as shown in Figure 2.

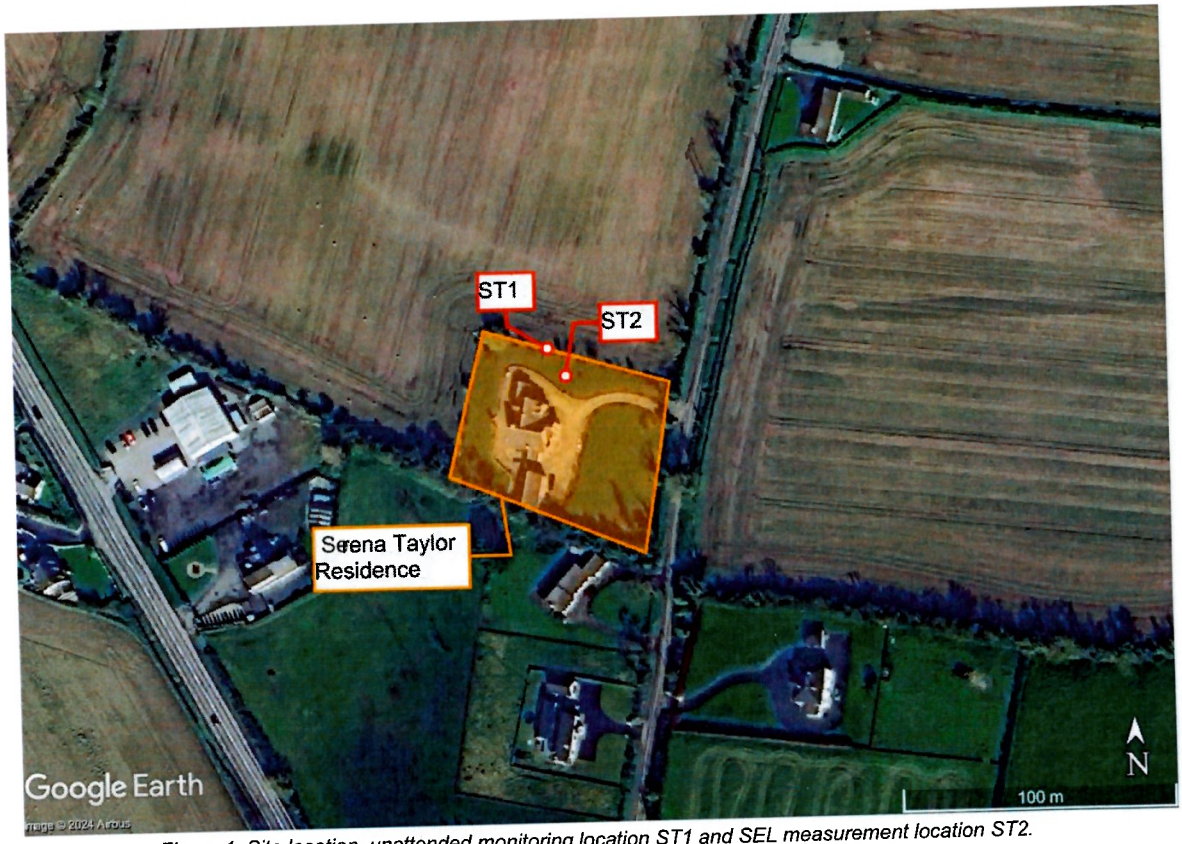

Figure 1: Site location, unattended monitoring location ST1 and SEL measurement location ST2.

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 ST1, as per Figure 1, in the garden to the side 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 3.5m above the ground in free-field conditions and is shown in Figure 3. Periodic visits were conducted by WDA during the survey to check the monitor.

Measurements of the L_{Aeq} and $L_{Amax,s}$ indices were recorded over consecutive 1-minute periods for the duration of the monitoring period. A glossary of these terms is provided in Appendix A.

On review of the measurement data by WDA, days of poor weather conditions had negligible impact on the daily $L_{Aeq,16hour}$ values and daytime $L_{ASmax,1min}$ measurements. Three of the nights (nights starting on the 21st, 22nd and 26th of August) were affected by extraneous noise from adverse weather conditions. In general, the effect of weather conditions had a negligible impact on the unattended aircraft noise measurements.

Based on a review of the audio recordings at the site, the daytime measurements recorded on 29th August 2024 have been impacted by extraneous noise.

Figure 3: Unattended Noise Logger Setup at ST1.

Attended Noise Measurements

The attended noise measurements were undertaken at location ST2, as per Figure 1, in the garden to the side 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 1.2m above the ground in free-field conditions.

Weather conditions during the attended monitoring periods were winds of less than 5 m/s and no rain for the attended surveys.

2.2.1 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	SLM2	NOR140	1406532	SLM230218	27/09/2025
Calibrator	CAL3	Nor 1251	32096	AC240251	03/07/2025
Noise Monitor/Microphone Assembly	-	EM2030/378B02	01537/316992	2401537	31/05/2026
Calibrator	CAL4	Larson Davis CAL200	21085	AC240249	29/06/2025

The attended measurements were undertaken with the Norsonic 140 Class 1 sound level meter and calibrated with a Nor 1251 calibrator (Serial no. 32096). The Sonitus EM2030 unattended noise monitor was calibrated with the Nor 1251 (serial no. 32096) at deployment and the Larson Davis CAL200 (serial no. 21085) at collection.

2.2.2 Subjective Noise Environment

The noise levels recorded during days of easterly winds when there were no take offs over the dwelling indicate that the noise levels at the residence were low. This indicated that the higher noise levels caused by aircraft take offs during westerly winds are not affected by any other non-aircraft noise sources and that aircraft noise was the dominant source of the noise at the development. Based on the attended noise survey and attendances during logger deployment and collection, the noise climate at the site consists of the following noise sources.

- Aircraft noise from aircraft fly overs during North Runway departures – this was the dominant noise source at the site, while aircraft were overhead no other noise sources were audible
- Road traffic noise from nearby road during periods in the absence of overhead aircraft.
- Periods of dogs barking.
- Periods of birdsong.

It was discussed with the resident that due be taken in relation to noise near the monitor to ensure that that the noise from any resident activity was minimised during the survey.

2.3 Noise Measurement Results

This section sets out the results of the noise monitoring.

Appendix B sets out the aircraft that operated at Dublin Airport during the summer monitoring period.

Unattended Monitoring Results

Appendix C sets out the results of the noise measurements recorded at the noise monitoring location ST1 for each 24-hour period over the full monitoring period in terms of:

- L_{den} 00:00hrs – 00:00hrs
- $L_{Aeq,16hour}$ 07:00hrs – 23:00hrs
- L_{night} 23:00hrs – 07:00hrs

These daily and nightly $L_{Aeq,T}$ values can be taken as being approximately representative of single mode contour values, with the monitoring location typically only experiencing either arrivals or departures in each period.

Figure 4 below highlights how often these daily daytime $L_{Aeq,16hour}$ values occur over the full 92-day monitoring period. The graph indicates a significant peak of 61dB(A) with a total of 38 occurrences. The logarithmically averaged daytime summer 92-day noise level at Serena Taylor's residence is 61dB $L_{Aeq,16hour}$.

The recorded 1-minute data of all the unattended noise measurement results are available on request.

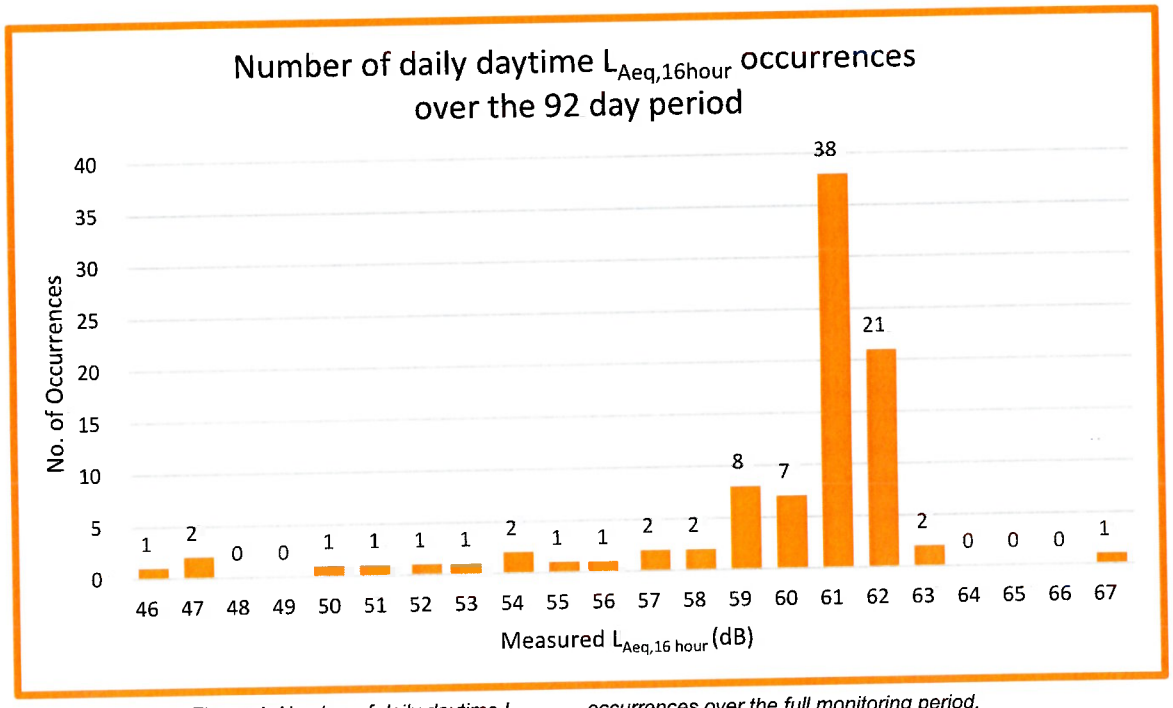

Figure 4: Number of daily daytime $L_{Aeq,16hour}$ occurrences over the full monitoring period.

L_{night} values ranged from 41 to 57dB(A) with a logarithmic average of 51dB(A) L_{night} over the 92-day period.

The L_{den} level was also calculated for the 92-day period and had a median occurrence and logarithmic average of 62dB L_{den}.

Attended Monitoring Results

Table 2 outlines the results of the attended measurements for aircraft flyover noise levels at location ST1. 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's predicted SEL contour maps supplied with the original North Runway application:

$$L_{AX} = L_{Aeq} - 10*\log_{10}(N) + 10*\log_{10}(T)$$

Where:

L_{Ax} = measured SEL
N = number of aircraft movements (1 aircraft movement for all SEL measurements undertaken)
T = time (seconds)

Table 2: Aircraft Flyover Noise Levels.

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level[1]
Location	Date	Time (hrs)	Duration (s)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
ST2	03/09/2024	09:27	44	Airbus A320-214	65	72	81
ST2	03/09/2024	09:30	52	Boeing 737 MAX 8-200	65	74	82
ST2	03/09/2024	09:32	65	Boeing 767-424(ER)	70	80	88
ST2	03/09/2024	09:34	51	Embraer E190 STD	64	72	81
ST2	03/09/2024	09:41	53	Airbus A320-232	64	71	81
ST2	03/09/2024	09:43	57	Boeing 787-9 Dreamliner	66	73	84
ST2	03/09/2024	09:45	53	ATR 72-600	54	59	71
ST2	03/09/2024	09:48	43	Bombardier Challenger	57	63	73
ST2	03/09/2024	09:50	47	Boeing 737 MAX 8	63	71	80
ST2	03/09/2024	09:53	51	Cessna 680 A Citation	59	69	76
ST2	03/09/2024	09:54	49	Boeing 737 MAX 8-200	64	74	81
ST2	03/09/2024	09:57	59	Boeing 777-3FX(ER)	66	76	84
ST2	03/09/2024	10:04	49	Boeing 737-8AS	64	73	81
ST2	03/09/2024	10:07	52	Airbus A320-251N	61	69	78
ST2	03/09/2024	10:09	58	Boeing 787-9 Dreamliner	65	75	83
ST2	03/09/2024	10:11	60	Boeing 737-8AS	65	75	83
ST2	03/09/2024	10:18	57	Boeing 737-8AS	63	73	81
ST2	03/09/2024	10:21	61	ATR 72-600	52	58	70
ST2	03/09/2024	10:25	47	Airbus A320-214	64	74	81
ST2	03/09/2024	10:26	72	Boeing 767-332(ER)	68	78	87
ST2	03/09/2024	10:29	53	Airbus A321-251 NX	63	71	80
ST2	03/09/2024	10:31	44	ATR 72-600	53	62	69
ST2	03/09/2024	10:35	83	Boeing 787-9 Dreamliner	63	73	82
ST2	03/09/2024	10:37	53	Boeing 737-8AS	66	75	83
ST2	03/09/2024	10:39	86	Airbus A321-253NX	61	71	80
ST2	03/09/2024	10:41	60	Airbus A320-214	64	72	82
ST2	03/09/2024	10:43	51	ATR 72-600	56	61	73

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level[1]
Location	Date	Time (hrs)	Duration (s)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
ST2	03/09/2024	10:46	63	Airbus A320-214	65	74	83
ST2	03/09/2024	10:48	51	Embraer E190LR	65	75	82
ST2	03/09/2024	10:58	64	Airbus A320-214	65	75	83
ST2	03/09/2024	11:00	62	Airbus A321-253 NX	62	75	80
ST2	03/09/2024	11:02	52	Airbus A321-271 NX	65	74	82
ST2	03/09/2024	11:06	60	Airbus A321-271 NX	64	72	82
ST2	03/09/2024	11:08	69	Airbus A321-231	66	74	84
ST2	03/09/2024	11:09	40	Airbus A321-271 NX	67	74	83
ST2	03/09/2024	11:12	58	Boeing 737 MAX 8-200	64	73	82
ST2	03/09/2024	11:18	83	Airbus A350-941	63	72	82
ST2	03/09/2024	11:24	60	Cessna 525C Citation	60	68	78
ST2	03/09/2024	11:26	63	Boeing 737-8AS	67	77	85
ST2	03/09/2024	11:27	62	Airbus A320-214	66	75	84
ST2	03/09/2024	11:29	57	Boeing 737-8AS	66	76	84
ST2	03/09/2024	11:36	56	Boeing 737-8K2	64	73	81
ST2	03/09/2024	11:48	69	Boeing 737 MAX 8-200	62	73	80
ST2	03/09/2024	11:49	60	Embraer E790SR	62	73	80
ST2	03/09/2024	11:55	53	Airbus A320-251N	59	72	76
ST2	03/09/2024	12:01	90	Airbus A330-302	69	78	89
ST2	03/09/2024	12:04	63	Boeing 737-8AS	65	74	83
ST2	03/09/2024	12:06	59	Boeing 777-223(ER)	71	80	89
ST2	03/09/2024	12:09	51	ATR 72-600	62	71	79
ST2	03/09/2024	12:13	47	Boeing 737-8AS	66	75	83
ST2	03/09/2024	12:14	48	Boeing 767-332(ER)	69	77	86
ST2	03/09/2024	12:16	90	Airbus A330-343	68	80	88
ST2	03/09/2024	12:19	54	Boeing 737 MAX 8-200	63	73	80
ST2	03/09/2024	12:21	49	Bombardier Challenger 350	59	66	76

Measurement				Aircraft Type	Measured Noise Levels		Sound Exposure Level[1]
Location	Date	Time (hrs)	Duration (s)		L_{Aeq} dB	L_{AFmax} dB	L_{AX} dB
ST2	03/09/2024	12:26	54	Airbus A320-214	66	74	83
ST2	03/09/2024	12:35	53	Boeing 737-8AS	65	76	82
ST2	03/09/2024	12:41	46	Boeing 737 MAX 8	63	72	80
ST2	03/09/2024	12:43	62	Airbus A320-251N	60	71	78
ST2	03/09/2024	12:45	59	Boeing 757-224	68	78	86
ST2	03/09/2024	12:53	62	Boeing 767-322(ER)	71	82	89
ST2	03/09/2024	12:55	84	Airbus A330-302	69	81	88
ST2	03/09/2024	13:00	50	Boeing 737 MAX 8-200	63	72	80
ST2	03/09/2024	13:03	77	Boeing 777-223(ER)	67	76	86
ST2	03/09/2024	13:12	76	Airbus A330-302	69	79	88

1. SELs calculated on the rounded L_{Aeq} values measured.

3 Analysis of Results

3.1 $L_{Aeq,16hr}$ (07:00hrs – 23:00hrs) Noise Levels

Difference in Noise Levels due to the Flightpath Change

Serena Taylor's dwelling is located in a predominantly agricultural area, surrounded by agricultural land and sporadic one-off housing developments with the M2 motorway and R135 to the west of the dwelling. The daytime noise levels in the area without the impact of North Runway departures have been considered. This is 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 and not passing over Serena Taylor's dwelling. These measurements have been reviewed. These noise levels without aircraft noise were typically in the range of 46 – 54dB(A) $L_{Aeq,16hour}$ over the summer 2024 period and were dominated by road traffic noise from local roads, the R135, and the M2 motorway. This can be considered representative of the noise levels in the absence of aircraft noise at the residence i.e. prior to the commencement of North Runway operations in August 2022.

The 2007 planning permission application for the North Runway submitted to Fingal County Council included noise contour maps as part of the documentation submitted in 2016. Here, the predicted $L_{Aeq,16hour}$ (07:00hrs to 23:00 hrs) noise contours for Dublin Airport from the aforementioned planning application with the North Runway in operation can be seen in Figure 5. The noise contours were developed by DAA based on the busiest 92-day period of the year for the airport, 16th June to 15th September (inclusive). For the purposes of comparison this is the same 92-day monitoring period used for this assessment.

Based on these DAA noise contour maps submitted with the planning application, Serena Taylor's residence is a significant distance from the lowest predicted contour of 60dB $L_{Aeq,16hour}$, therefore noise from aircraft flyovers would be expected to be below this value. Given the baseline noise levels in the absence of aircraft noise (from the days of easterly departures), and the predicted DAA contours, it was not anticipated that noise from the aircraft would have had a significant impact at the residence. This is based on the contours provided by the DAA which predicted the noise levels based on the straight-ahead flight paths originally permitted to be used by the DAA.

However, due to the diverging flightpaths used for North Runway departures (DAA contours vs current operations) the noise levels currently experienced at the residence are much higher. From the results of the unattended noise monitoring outlined in Table 6 (see Appendix C), the real-life measured corresponding daytime noise levels, $L_{Aeq,16hour}$ averaged over the same 92-day period as the DAA contour maps are developed is currently 61dB(A).

This demonstrates that the measured levels at the residence exceed the original North Runway permission predicted levels when compared to the 92-day monitoring period of which the contours are based on. In the short period of time since the North Runway commenced operations in August 2022 the daytime noise levels have increased from an average of 51dB $L_{Aeq,16hour}$ to 61dB $L_{Aeq,16hour}$. Using the DAA's own metric for assessing the impact in increase in noise levels (Figure 9), the impact caused in this short period since the commencement of North Runway operations would be classed as "Very High", which is a significant descriptor of impact due to change in noise level.

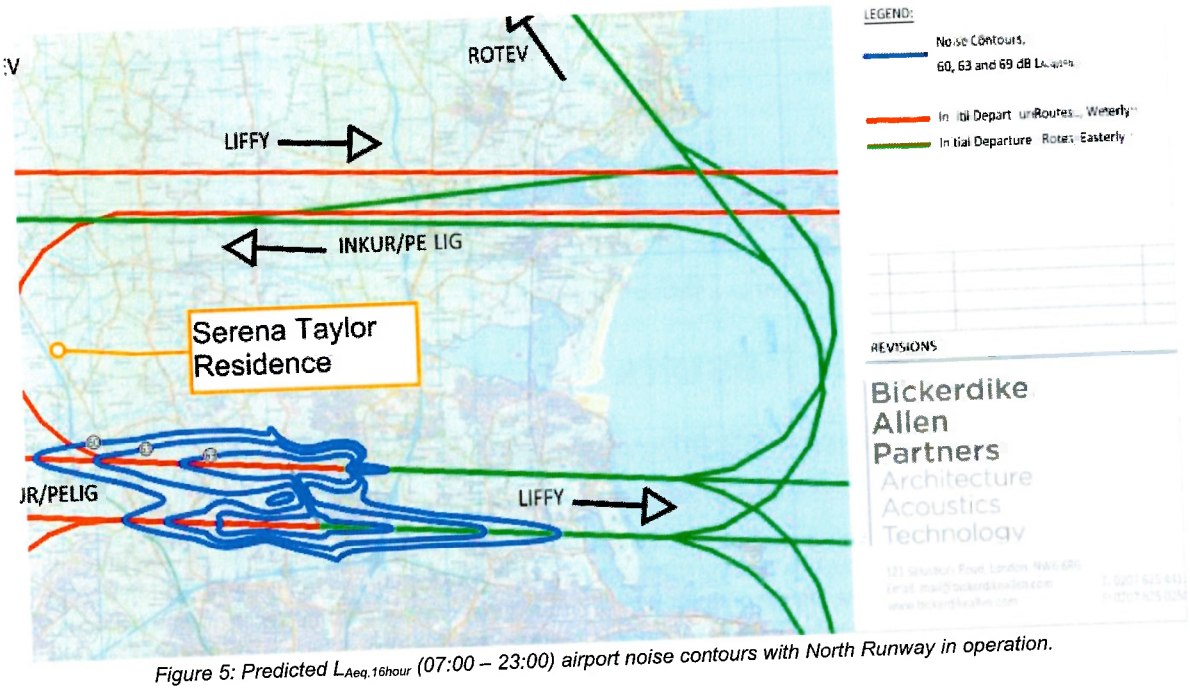

Figure 5: Predicted $L_{Aeq,16hour}$ (07:00 – 23:00) airport noise contours with North Runway in operation.

Difference in Noise Levels Measured Versus DAA Predicted Noise Levels

Additional noise contour maps presented in the most recently submitted EIAR supplement by DAA provided to ABP place Serena Talor's dwelling within the 57 – 59dB $L_{Aeq,16hr}$ contour for the 2025-year scenario as shown in Figure 6. Given that the measurements were undertaken during the summer of 2024, and they find noise levels are 61dB $L_{Aeq,16hr}$ it would indicate that the predicted noise contours from the aircraft flyovers underpredict the noise impact of the North Runway compared to the actual measured values. This also reinforces the theory that the flight paths being used differ to those permitted causing the increase in noise levels at this residence.

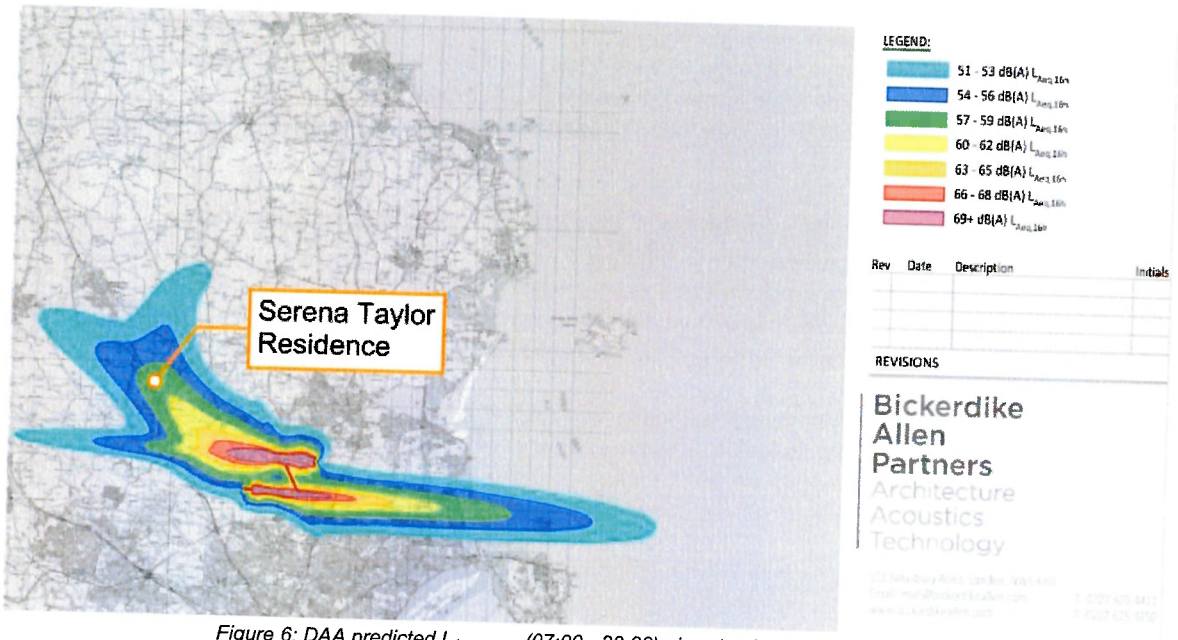

Figure 6: DAA predicted $L_{Aeq,16hour}$ (07:00 - 23:00) airport noise contours for 2025.

3.1.1 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 and not flying over the residence, it can be determined that the $L_{Aeq,16hour}$ noise levels at the residence were typically in the range of 46 – 54dB. The days of easterly take-offs from the South Runway can be easily identified on Figure 4 showing the number of $L_{Aeq,16hour}$ occurrences as these are the lowest and least occurring noise levels. 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 provide evidence 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 adversely affected by any other non-aircraft noise sources.

As outlined in Section 3.1, the average daytime noise levels at the residence rose to 61dB(A) when averaged over the full 92-day period. This is an increase of approximately 10dB due to North Runway operations and is an exceedance of the relevant industry criteria for external amenity noise levels based on the measured noise levels without aircraft.

3.2 L_{night} (23:00hrs – 07:00hrs) Noise Levels

The 2024 operating procedure of the North Runway does not permit any nighttime (23:00hrs – 07:00hrs) departures from the North Runway and therefore almost all nighttime recorded noise levels at the residence do not include contribution to noise from Dublin Airport. There were some North Runway take offs between 26th and 28th of August understood to be due to South Runway maintenance, which totalled 6 take offs during this time.

The Relevant Action planning application that us under consideration by An Bord Pleanála, if granted, will allow nighttime departures on the North Runway which will lead to a further significant change in the night-time noise levels at the residence based on the existing flight paths and measured data.

As per the summary of the recorded noise levels outlined in Table 6, the average measured L_{night} noise levels at Serena Taylor's property measured at location ST1 are 51dB L_{night} over the 92-day monitoring period. As per the initial granting of permission for the North Runway, there were no nighttime departures permitted, and the residents did not anticipate experiencing noise levels of any magnitude under the initial application and granting during the nighttime.

The proposed Relevant Action application will see an increase in nighttime noise levels at the property due to the commencement of nighttime departures from the North Runway. In the year 2025, the L_{night} noise levels with the proposed nighttime take offs from the North Runway are predicted to be in the range of 50 - 54dB(A) L_{night} based on the noise contour maps presented in the most recently submitted EIAR supplement by DAA provided to ABP shown in Figure 7. This will cause an increase in the noise levels at the dwelling.

This could result in noise levels possibly increasing by up to 3dB at nighttime compared to the existing average noise levels. This is an increase on the existing noise levels from aircraft on the dwelling. This increase is based on the DAA's predicted noise levels for the 2025 scenario, which (as per the daytime noise levels recorded at the site versus the DAA predictions) is underpredicted and therefore the increase could be more significant.

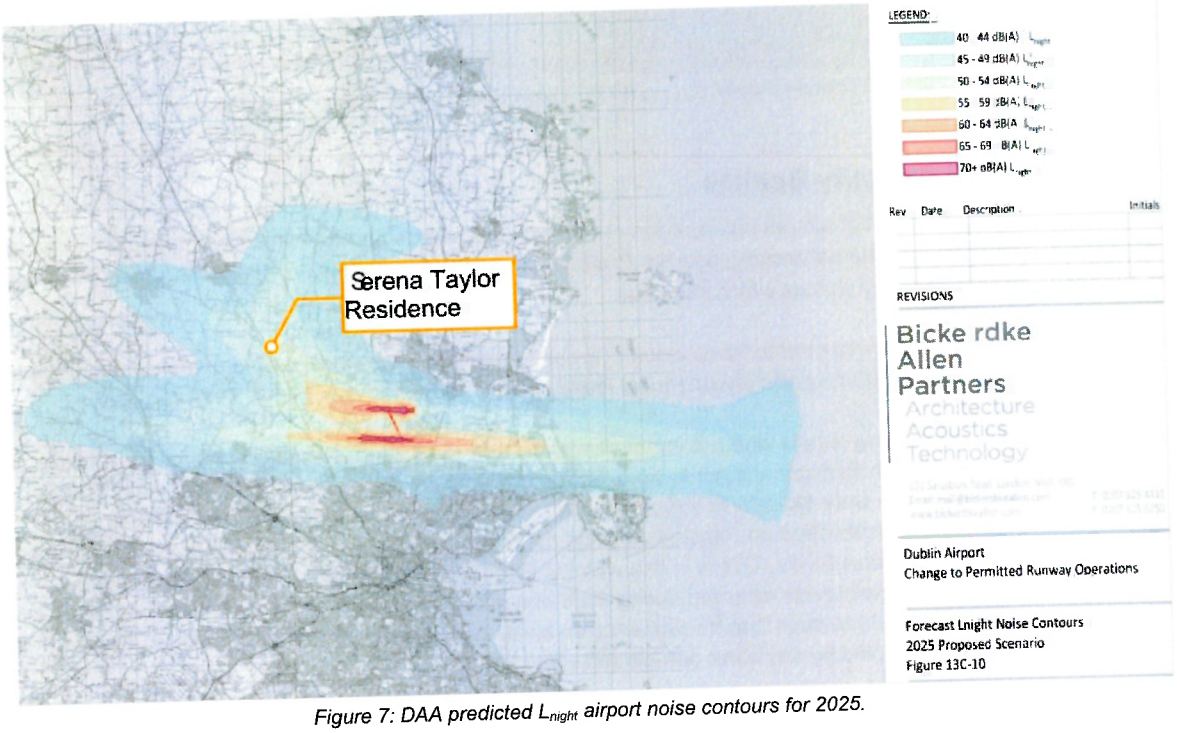

Figure 7: DAA predicted L_{night} airport noise contours for 2025.

DAA Metric to Assess Noise Impact

To establish the aircraft noise impact of the North Runway, Tables 13-2, 13-3, and 13-4 from the EIAR (shown below in Figure 8, Figure 9 and Figure 10) 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 nighttime L_{night} noise level at the residence with the proposed development being permitted, as outlined in this section, an air noise impact scale description of "Medium" is appropriate for the L_{night}. Pairing this with a change in noise level of up to 3dB(A) due to North Runway operations to give a relative noise impact scale of "Low" subsequently the magnitude of the effect of the North Runway can be described as "Moderate" as per Table 13-4 of the *Dublin Airport North Runway EIAR Volume 2 – Main Report*. According to the guidelines provided by the DAA, this categorisation reflects an adverse effect on Serena Taylor's dwelling.

Given the discrepancy between daytime noise levels measured versus the contours predicted by DAA it is plausible that the night-time L_{night} noise impact 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).

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

Figure 10: Dublin Airport North Runway EIAR Volume 2 – Main Report Table 13-4: Summary of Magnitude of Effect - Air Noise.

3.3 Internal Noise Levels

The internal noise levels have not been assessed as part of the assessment as these are highly dependent on the building fabric such as the façade, glazing and ventilation constructions when windows are in the closed position. Studies have shown that the reduction in the noise levels from outdoor to indoor across a half-open or

tilted window are approximately 16dB(A) and 10dB(A) across an open window[1]. Based on the daytime measured noise levels at the residence of 61dB $L_{Aeq,16hr}$, an internal noise level of 51dB $L_{Aeq,16hr}$ would be likely with an open window, and 45dB $L_{Aeq,16hr}$ with a tilted window. These noise levels significantly exceed the BS8233 and World Health Organisation recommended internal noise levels of 35 - 40dB $L_{Aeq,16hr}$ in living and dining spaces for the daytime period.

From the DAA 2025 predicted noise levels at the dwelling, the nighttime noise levels are predicted to be 50dB - 54dB L_{night}. The DAA nighttime predicted noise levels at the residence would result in a likely internal noise level of 40 - 44dB(A) L_{night} with an open window, and 34-38dB(A) L_{night} with a tilted window. The World Health Organisation recommends noise levels of no more than 30dB(A) L_{night} to ensure sleep is not affected by noise levels as this can have negative impacts on health. These internal noise levels are likely to significantly exceed the WHO recommendation with windows tilted or open.

For dwellings located in suburban areas being able to open the windows for ventilation and cooling is essential, particularly in the summer months when temperatures increase as dwellings in Ireland are often designed with the intent of retaining heat. Without the ability to open the windows due to the noise levels internally from doing so caused by North Runway operations, residents may require mechanical ventilation systems to enable cooling and air circulation.

3.4 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:

$$L_{Aeq} = L_{AX} + 10*\log_{10}(N) - 10*\log_{10}(T)$$

Where:

L_{Ax} = measured SEL
N = number of vehicle movements (1 aircraft movement for all SEL measurements undertaken)
T = time (seconds)

A correction was then applied to the results to account for days of easterly winds for which 10 days was allowed for (5 full days and 5 days of majority easterly take offs based on review of flight information) 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 2024 is 59dB(A).

This is slightly below the logarithmic average $L_{Aeq,16hour}$ measured over the full 92-day period of 61dB(A) however it shows reasonable agreement. Given the distance the dwelling is from the original application 60dB $L_{Aeq,16hour}$ noise contour, the noise levels currently being experienced on the site were not anticipated by the resident during the initial planning application.

3.5 Comparison of SEL Noise Levels

As part of the Relevant Action Application for the North Runway submitted to Fingal County Council for the North Runway, SEL contours were 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:

[1] International Journal of Environmental Research and Public Health 2018 'Differences between Outdoor and Indoor Sound Levels for Open, Tilted, and Closed Windows'.

- Boeing 737-800
- Airbus A320
- Airbus A330

We understand that while these contours are now outdated due to differing flightpaths, they formed the basis of the noise levels which residents could expect at their dwelling for the purpose of the initial planning application and permission of the North Runway. The most recently submitted EIAR supplement by DAA provided to ABP has not included SEL noise levels for specific aircraft types.

The predicted SEL contours predicted in 2018 are shown for the above referenced aircraft type in Figure 11, Figure 12 and Figure 13 below, respectively.

3.5.1 Boeing 737-800

For the DAA predicted SEL contours for the Boeing 737-800 as shown in Figure 11 below, Serena Taylor's residence currently lies 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 81 – 85 dB(A) for the Boeing 737-8AS[2] with a logarithmical average SEL of 83dB(A).

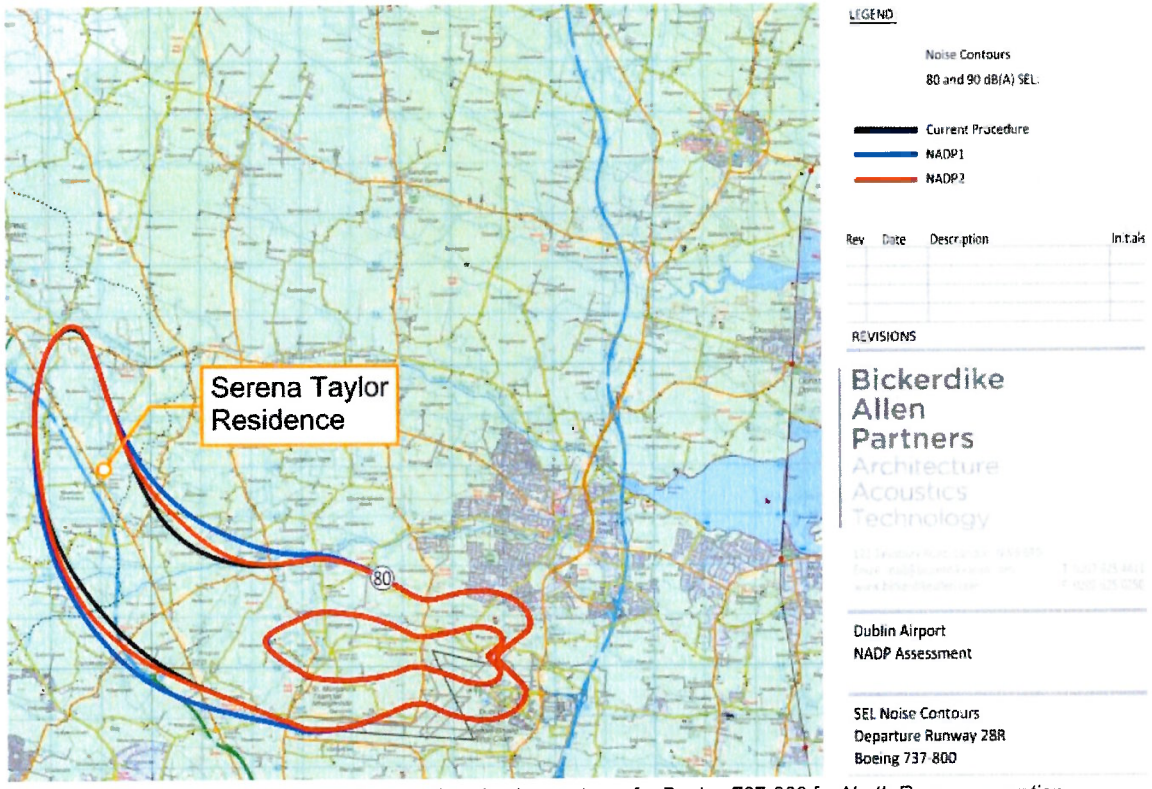

Figure 11: Predicted Sound Exposure Level noise contours for Boeing 737-800 for North Runway operation.

Boeing 737-800 MAX

It should be noted that the Boeing 737-800 MAX which is a newer generation model of the Boeing 737-800 aircraft with newer engines, increased fuel efficiency and most notably lower noise emissions. Based on the recorded noise levels at Serena Taylor's residence for the Boeing 737-800 MAX the logarithmical average SEL recorded was 81dB(A).

[2] The "AS" refers to the specific customer code for Ryanair so the 737-8AS refers to a 737-800 aircraft customized for Ryanair's specifications

3.5.2 Airbus A320

The DAA predicted SEL contours for the Airbus A320 as shown in Figure 12 below, Serena Taylor's residence currently lies just on the edge of 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 81 – 84dB(A) for the Airbus A320 with a logarithmical average SEL of 82dB(A). This highlights an exceedance of the predicted SEL noise levels by an average of 2dB(A).

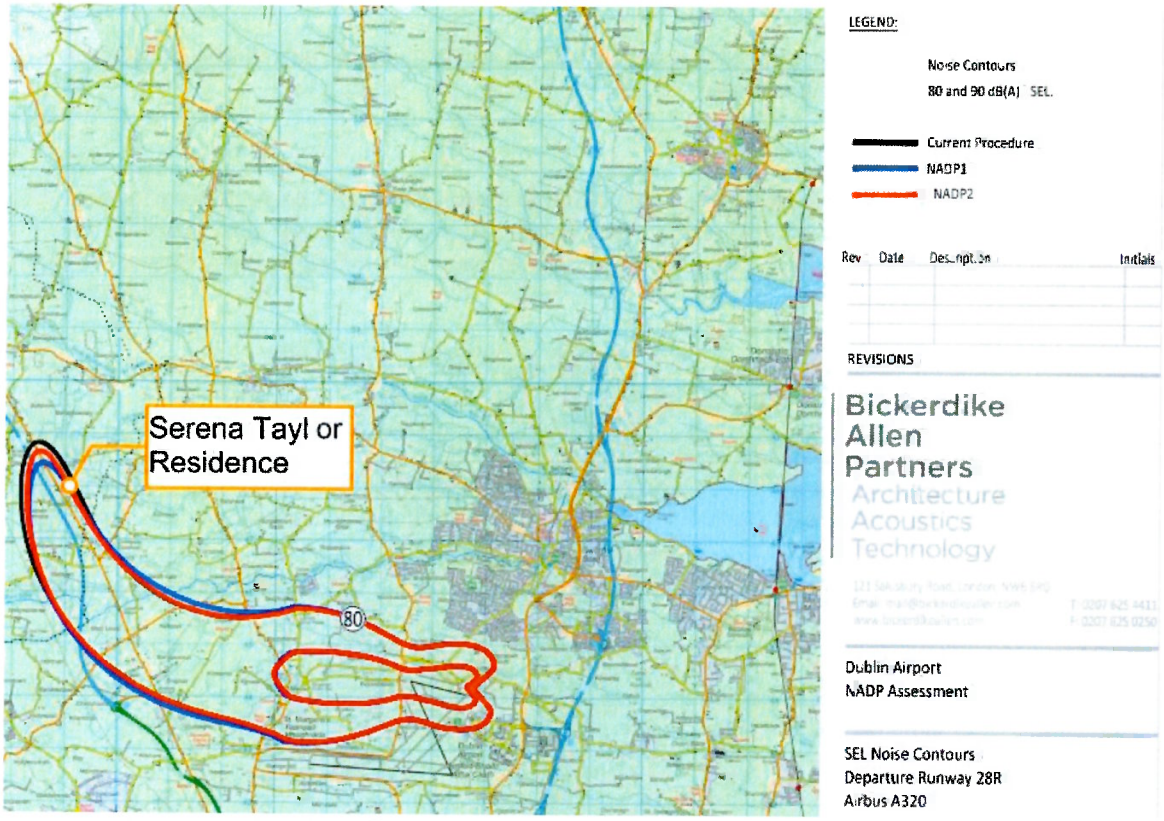

Figure 12: Predicted Sound Exposure Level noise contours for Airbus A320 for North Runway operation.

3.5.3 Airbus A330

For the DAA predicted SEL contours for the Airbus A330 as shown in Figure 13 below, Serena Taylor's residence currently lies within 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 was between 88dB(A) and 89db(A) for the Airbus A330 with a logarithmic average SEL of 88dB(A).

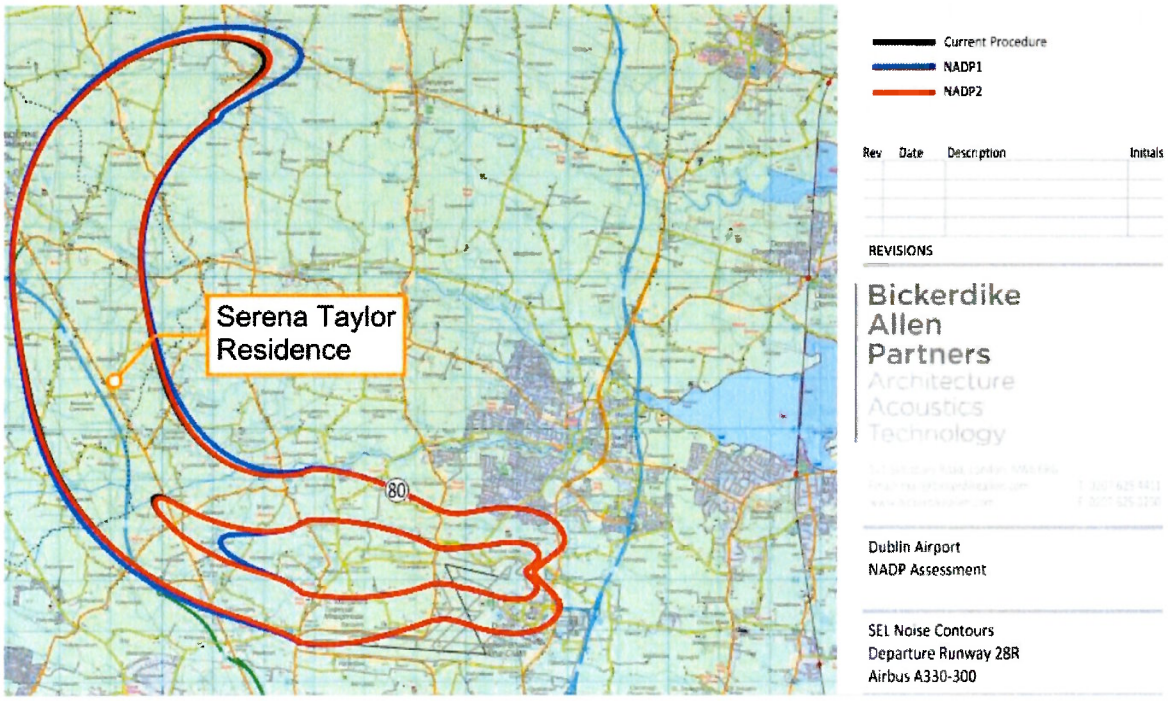

Figure 13: Predicted Sound Exposure Level noise contours for Airbus A330 for North Runway operation.

3.6 L_{Amax} Noise Levels

As the current 2024 operating procedure of the North Runway permits only daytime departures on the North Runway, the nighttime recorded measurements at the residence do not typically include any aircraft departures. There were two nights where aircraft departed the North Runway in the nighttime period from August 26th to August 28th 2024, understood to be due to South Runway maintenance. During this period there were a total of 7 nighttime North Runway departures typically between 23:20hrs – 02:30hrs.

To highlight the significant impact of these departures at Serena Taylor's dwelling, Table 3 below outlines an 8-minute period of the recorded noise levels each minute from the 28th of August 2024. During this 8-minute period there were two nighttime departures from the North Runway, an Airbus A321 and an Airbus A320. As can be seen from the table, the $L_{Aeq,1min}$ noise levels rose by 16dB(A) from 00:32hrs to 00:33hrs rising to 66dB $L_{Aeq,1min}$. After the aircraft has passed, the noise levels in the area return to 48dB $L_{Aeq,1min}$ at 00:34hrs and 00:35hrs before sharply increasing again in the space of 1 minute up to 64dB $L_{Aeq,1min}$. Similarly, the $L_{AS,max}$ measured noise levels rise by 16dB at 00:33hrs to 73dB $L_{AS,max}$ and then return to typical at 52dB $L_{AS,max}$ within 1 minute of the aircraft passing. The maximum noise levels then increase again for the second aircraft departure by 19dB to 70dB L_{ASmax}.

This shows the potential impact that nighttime departures will have at this residence with constant fluctuations and potential impact on sleeping for residents.

Table 3: 1-minute measured noise levels at ST1.

Date	Time	$L_{Aeq,1min}$ dB	L_{ASmax} dB	Aircraft Type
28/08/2024	00:31	48	53	N/A
28/08/2024	00:32	50	57	Airbus A321
28/08/2024	00:33	66	73	
28/08/2024	00:34	48	52	N/A

Date	Ti me	$L_{Aeq,1min}$ dB	L_{ASmax} dB	Aircraft Type
28/08/2024	00:35	48	51	N/A
28/08/2024	00:36	64	70	Airbus A320
28/08/2024	00:37	51	56	
28/08/2024	00:38	49	51	N/A

To evaluate further the impact of nighttime departures from the North Runway, the $L_{ASmax,1min}$ daytime measurement data recorded over the 92-day measurement period at Serena Taylor's property (07:00hrs to 23:00hrs) has been plotted on Figure 14 below for the full measurement period. This provides an indication of the L_{ASmax} levels that can be expected at the residence following the existing flight paths should nighttime flights be permitted from 2025.

Figure 14 below shows a representation of bimodal distribution. The major mode (peak on the left) occurs at 60dB L_{ASmax}. From a review of the audio playback and the recorded noise levels at the dwelling, the peak occurrences at 60dB L_{ASmax} were typically caused by road traffic passes on the R135 Road and the M2 motorway, distant aircraft movements and periods of birdsong and dogs barking. From a review of the unattended noise measurements during days of easterly winds, it is evident that the L_{ASmax} values were attributed to road traffic and motorway traffic which contributed to this peak on the left of the graph.

The minor mode (peak on the right) occurring at 72dB L_{ASmax} consisted of the vast majority noise from aircraft passes at the dwelling. This can be concluded from a review of the days of easterly winds, as noise contribution from other sources did not typically reach this level. The measured 72dB L_{ASmax} noise level is consistent with the maximum noise levels measured at the site during the attended noise survey and therefore it can be concluded that this maximum noise level is predominantly due to aircraft noise.

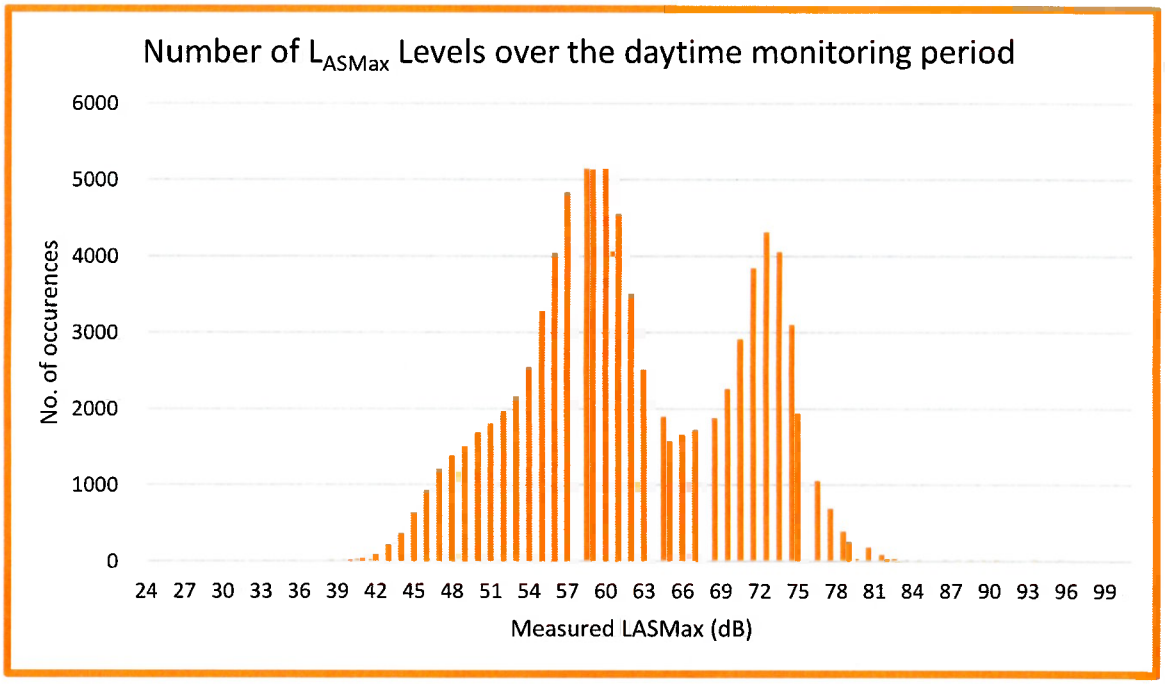

Figure 14: Number of L_{AsMax} events for the daytime monitoring period.

The An Bord Pleanála (ABP) draft decision regarding the application by DAA to allow nighttime flights on the North Runway in relation to extending the noise insulation grant scheme states:

"Further eligibility to the scheme shall include for all residential dwellings that satisfy the following criteria:

- *Residential dwellings situated in the 50dB Lnight contour in the first full year when the Relevant Action comes into operation, together with a change of at least +9dB when compared with the current permitted operation in the same equivalent year.*
- *Residential dwellings subject to aircraft noise of 80dB LAmax based on the noise footprint of the airport's westerly and easterly single modes of approach and departure (not averaging the modes of operation of the airport over the 92 days of summer) between 2300hrs and 0700hrs."*

From a review of the 1-minute daytime maximum noise levels recorded at the dwelling, there were a total of 283 daytime L_{Amax} events ≥ 80dB. This is an average of just above 3 events per day at a minimum 80dB L_{Asmax}. This shows that should nighttime takeoffs be permitted from the North Runway, the L_{Amax} threshold for noise insulation grants as per the ABP draft decision will be exceeded.

This criterion is expected to be achieved at Serena Taylor's dwelling.

Internal L_{Amax} Noise Levels

As outlined in Section 3.3, studies have shown that the reduction in noise levels from outdoor to indoor across a half-open or tilted window are approximately 16dB(A) and 10dB(A) across an open window[3]. The noise levels currently being experienced at the dwelling are often above 80dB L_{ASmax}, an internal level of 70dB(A) L_{ASmax} would be expected with windows open, or 64dB(A) L_{ASmax} with windows in the tilted position. This would have a harmful impact on the resident's health due to additional awakenings particularly if nighttime departures are permitted.

3.6.1 DAA L_{Amax} Contours

The DAA have provided predicted L_{Amax} contours within Appendix 9-4 of the recent Infrastructure Application submission in 2024 for various departure and arrival scenarios. Within this, the L_{Amax} contours were produced for the following four aircraft types:

- Airbus A320
- Airbus A320neo
- Boeing 737-800
- Boeing 737-800 MAX

This section outlines the predicted L_{Amax} noise levels for the Airbus A320 and Boeing 737-800 aircraft for North Runway departures (Runway 28R Departure) and a comparison with the recorded L_{Amax} noise levels during the attended survey at location ST2.

Airbus A320

The DAA predicted L_{Amax} noise levels for the Airbus A320 aircraft is shown below in Figure 15. It should be noted that the Airbus A320 was renamed to A320ceo meaning "current engine option" and these are the same aircraft. Serena Taylor's residence lies within the 70dB L_{Amax} contour. The measured L_{Amax} noise levels recorded at the dwelling during the attended survey (shown in Table 2) ranged from 71 – 75dB, with a logarithmic average L_{Amax} of 73dB. Given the dwelling is just on the outer edge of the contour, it would be expected that the L_{Amax} levels would be closer 70dB than 75dB, however, the average L_{Amax} was 73dB for the Airbus A320. This indicates that the DAA predicted L_{Amax} values may be underpredicted.

[3] International Journal of Environmental Research and Public Health 2018 'Differences between Outdoor and Indoor Sound Levels for Open, Tilted, and Closed Windows'.

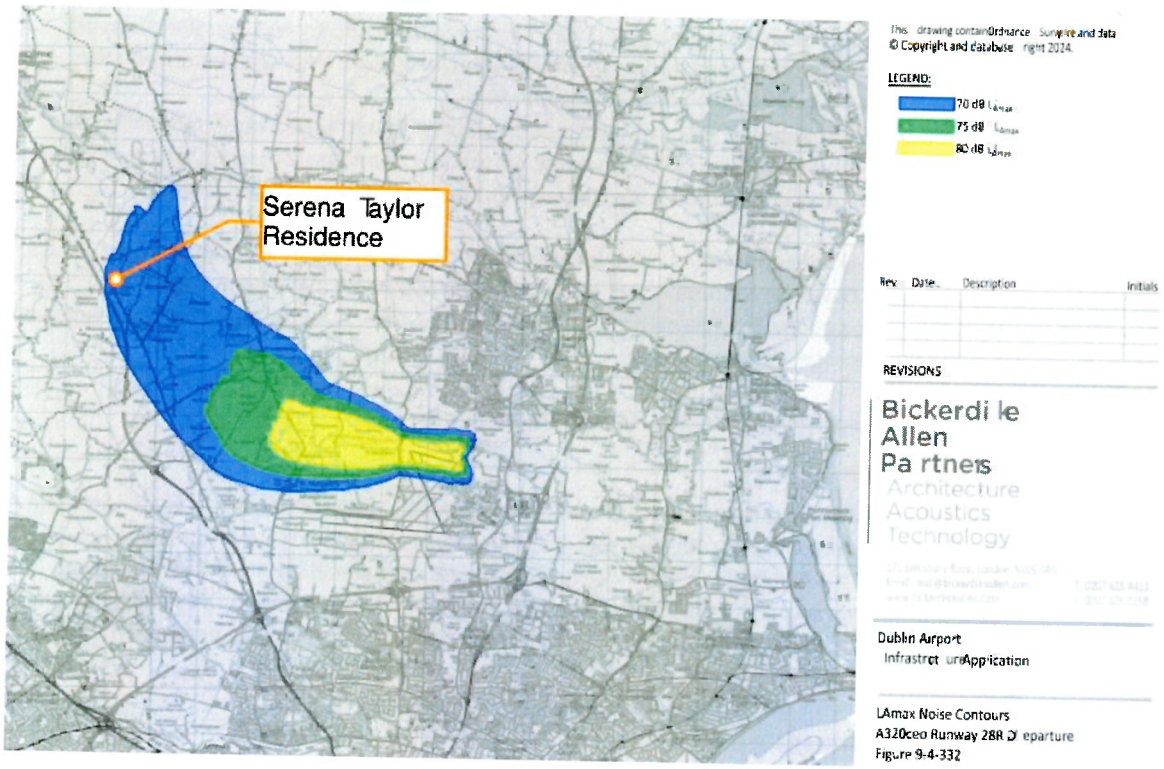

Figure 15: DAA predicted L_{Amax} noise levels from Airbus A320 aircraft.

Boeing 737-800

The DAA predicted L_{Amax} noise levels for the Boeing 737-800 aircraft is shown below in Figure 16. The contours state "Boeing 738" which is the Boeing 737-800 aircraft. Serena Taylor's residence lies within the 70-75dB L_{Amax} contour. The measured L_{Amax} noise levels recorded at the dwelling during the attended survey (shown in Table 2) ranged from 73 – 77dB, with a logarithmic average L_{Amax} of 75dB. Given the distance the dwelling is located from the 75dB L_{Amax} contour, this indicates that the predicted L_{Amax} values are being underpredicted.

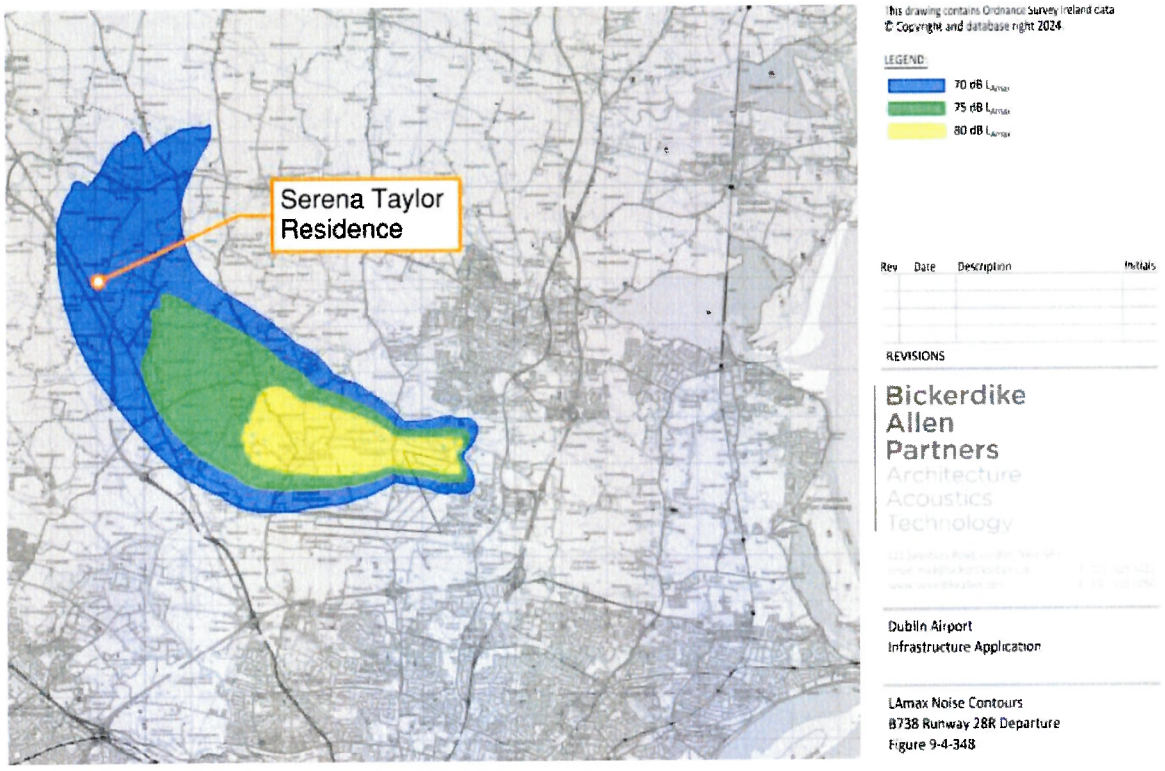

Figure 16: DAA predicted L_{Amax} noise levels from Boeing 737-800 aircraft

4 Conclusion

Following the commencement of operations of the new Dublin Airport North Runway in August 2022, Wave Dynamics were engaged by Serena Taylor to assess the noise levels from aircraft flyovers using long term (92 Day) noise monitoring at Masspool, Co. Meath, K67 TX89.

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.

From the original application for the North Runway in 2007, and supplementary documents submitted up to 2018, the predicted noise impact proposed at Serena Taylor's dwelling does not correlate with the measured noise levels which indicates that the predictions underpredicted the noise impact.

Based on the results of the unattended noise monitoring at the residence, a 92-day average $L_{Aeq,16hour}$ of 61dB(A) was recorded which shows an exceedance of the DAA predicted contour maps which predicted the dwelling to be significantly outside the 60dB(A) contour based on the same 92 day period based on the 2007 planning permission compliance contours submitted to Fingal County Council in 2016.

Sound exposure level measurements have also been taken at the residence for individual aircraft flyovers 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 59dB(A). The purpose of this calculation was to compare with the measured long-term monitoring.

The measured $L_{Aeq,16hour}$ exceeds the DAA predicted 92-day noise level at the residence which predicted less than 60dB(A) for aircraft noise exposure. In addition, this has been compared to the DAA 2025 predicted noise contours, which predicts the dwelling within the 57 - 59dB(A) contour. The measurements undertaken in 2024 do

not correlate with the most recent DAA noise contours which places doubts over the accuracy of the DAA contours when compared to actual measured data from the same period.

The DAA predicted L_{night} nighttime 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 should the commencement of nighttime flights be approved it will have a "Moderate" impact on the noise levels at the residence. This is an indicative descriptor of negative noise impact at the dwelling for nighttime noise should North Runway departures be permitted.

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 that the predictions were generally compliant for all three aircraft types. The newer generation aircraft for the Boeing 737-800 MAX and Airbus A320 Neo were also compared to the predicted noise contours of the noisier older generation models. Both the older aircraft and these newer "lower noise" generation Boeing 737-800 MAX aircraft generally aligned with the predicted contours submitted by DAA.

The daytime L_{ASmax} values over the full 92-day monitoring period were also plotted to assess the eligibility of the dwelling with the ABP draft decision for extending the noise insulation scheme. There were a number of events recorded at the dwelling which met or exceeded 80dB L_{Amax}, with an average of just above 3 occurrences per day. The permission of nighttime take offs from the North Runway will cause an increase in the maximum noise levels at the dwelling.

There were a small number of nighttime aircraft departures from the North Runway during the 2024 summer period. These were measured from the noise logger at the dwelling. It was clear that the nighttime departures had a significant impact on the noise levels at the residence. The $L_{Aeq,1min}$ noise levels fluctuated by 16dB(A) due to the intermittent North Runway nighttime departures with a rise in L_{ASmax} noise levels increasing by 19dB in a 1-minute period.

The DAA predicted L_{Amax} contour levels have been compared to the attended measurements undertaken at the site for both the Airbus A320 and Boeing 737-800 aircraft types. Based on the measured L_{Amax} noise levels and the dwelling location it is likely that the DAA predicted L_{Amax} noise levels are being underpredicted.

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 for 2024 have been submitted to DAA by ANCA and are outlined below in Table 4.

Table 4.Volume of each aircraft typeover the entire year and over summer period.

Aircraft Type	2024						
	Annual Average				Summers Period		
	Annual Day	Annual Eve	Annual Night	Annual 24hr	Summer Day 16 hr	Summer Night	Summer 24hr
Airbus A300	0	0	0	0	0	0	0
Airbus A306	597	299	299	1195	262	87	350
Airbus A319	1792	0	0	1792	524	0	524
Airbus A320	39428	11649	4182	55258	14945	1224	16169
Airbus A320neo	4182	1493	299	5974	1661	87	1748
Airbus A321	1792	896	597	3286	787	175	961
Airbus A321neo	6571	0	597	7169	1923	175	2098
Airbus A330	8961	0	896	9857	2622	262	2884
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	9558	2390	0	11948	3496	0	3496
BAe 146/Avro RJ	0	0	0	0	0	0	0
Boeing 737-400	597	1195	597	2390	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	39726	11350	4480	55557	14945	1311	16256
Boeing 737 MAX	17623	8363	3286	29272	7604	961	8565
Boeing 757	2390	299	299	2987	787	87	874
Boeing 767	1792	1195	597	3584	874	175	1049
Boeing 777	597	0	597	1195	175	175	350
Boeing 777X	597	597	0	1195	350	0	350
Boeing 787	3584	597	597	4779	1224	175	1398
Bombardier CS300	1792	597	0	2390	699	0	699
Bombardier Dash 8	597	0	0	597	175	0	175
Convair 580	0	0	0	0	0	0	0
Embraer E190/195	5078	2390	299	7766	2185	87	2272
Embraer E190-E2	597	0	0	597	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
Other	2390	1195	0	3584	1049	0	1049
Total	**150243**	**44505**	**17623**	**212372**	**56985**	**5157**	**62141**

The volume of flights per aircraft type for 2025 have been submitted to DAA by ANCA and are outlined below in Table 5.

Table 5: Volume of each aircraft type over the entire year and over summer period.

Aircraft Type	2025						
	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	596	298	298	1191	262	87	350
Airbus A319	1787	0	0	1787	524	0	524
Airbus A320	44077	11913	4169	60159	16431	1224	17655
Airbus A320neo	3574	1191	298	5063	1398	87	1486
Airbus A321	1787	893	298	2978	787	87	874
Airbus A321neo	6552	0	893	7445	1923	262	2185
Airbus A330	8339	0	893	9232	2447	262	2709
Airbus A330neo	596	0	0	596	175	0	175
Airbus A350	0	0	0	0	0	0	0
ATR 42	0	0	0	0	0	0	0
ATR 72	9530	2383	0	11913	3496	0	3496
BAe 146/Avro RJ	0	0	0	0	0	0	0
Boeing 737-400	596	1191	596	2383	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	46162	13997	5956	66116	17655	1748	19403
Boeing 737 MAX	14593	6254	1787	22634	6118	524	6642
Boeing 757	1787	298	298	2383	612	87	699
Boeing 767	596	1191	596	2383	524	175	699
Boeing 777	596	596	596	1787	350	175	524
Boeing 777X	596	0	0	596	175	0	175
Boeing 787	4765	596	596	5956	1573	175	1748
Bombardier CS300	1787	596	0	2383	699	0	699
Bombardier Dash 8	596	0	0	596	175	0	175
Convair 580	0	0	0	0	0	0	0
Embraer E190/195	5063	2383	298	7743	2185	87	2272
Embraer E190-E2	596	0	0	596	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
Other	2383	1191	0	3574	1049	0	1049
Total	**156950**	**44970**	**17571**	**219492**	**59257**	**5157**	**64414**

Appendix C - Unattended Noise Monitoring Results

Table 6 below outlines the noise levels recorded at location ST1 over the period 16th of June 2024 to 15th of September 2024 (inclusive). The results are averaged over the following periods:

- L_{den} 00:00hrs – 00:00hrs
- $L_{Aeq,16hour}$ 07:00hrs – 23:00hrs
- L_{night} 23:00hrs – 07:00hrs

Table 6: Unattended Measurement Results.

Start Date	L_{den} (00 00- 00:00)dB	$L_{Aeq,1\ 6hour}$ (07:00 - 23:00) dB	L_{night} (23:00 - 07:00) dB
16/06/2024	62	61	53
17/06/2024	63	61	49
18/06/2024	62	61	52
19/06/2024	60	59	52
20/06/2024	61	60	51
21/06/2024	62	62	52
22/06/2024	62	61	49
23/06/2024	58	57	50
24/06/2024	61	59	51
25/06/2024	61	59	51
26/06/2024	61	58	53
27/06/2024	64	63	54
28/06/2024	63	62	46
29/06/2024	60	60	50
30/06/2024	62	61	52
01/07/2024	62	61	52
02/07/2024	63	61	51
03/07/2024	63	62	54
04/07/2024	63	62	52
05/07/2024	62	61	50
06/07/2024	62	61	49
07/07/2024	61	61	49
08/07/2024	57	55	42
09/07/2024	53	51	51
10/07/2024	62	62	51
11/07/2024	62	60	50
12/07/2024	62	61	47
13/07/2024	59	59	41
14/07/2024	57	54	47
15/07/2024	56	52	50
16/07/2024	62	61	51

Start Date	L_{den} (00:00 - 00:00) dB	$L_{Aeq,16hour}$ (07:00 - 23:00) dB	L_{night} (23:00 - 07:00) dB
17/07/2024	62	61	46
18/07/2024	60	59	49
19/07/2024	62	61	47
20/07/2024	61	61	50
21/07/2024	62	61	50
22/07/2024	60	60	47
23/07/2024	60	59	50
24/07/2024	61	59	51
25/07/2024	63	62	53
26/07/2024	63	61	47
27/07/2024	61	61	50
28/07/2024	58	56	48
29/07/2024	61	61	51
30/07/2024	60	59	48
31/07/2024	57	57	57
01/08/2024	62	61	50
02/08/2024	62	61	50
03/08/2024	62	61	47
04/08/2024	61	61	47
05/08/2024	61	60	50
06/08/2024	62	61	51
07/08/2024	63	62	47
08/08/2024	61	60	53
09/08/2024	63	62	48
10/08/2024	61	61	47
11/08/2024	52	47	50
12/08/2024	62	61	47
13/08/2024	61	61	53
14/08/2024	62	61	51
15/08/2024	62	61	51
16/08/2024	62	61	50
17/08/2024	62	61	49
18/08/2024	61	61	48
19/08/2024	61	60	52
20/08/2024	63	62	53
21/08/2024	63	61	54
22/08/2024	63	62	54
23/08/2024	64	62	50
24/08/2024	62	62	50
25/08/2024	62	61	52
26/08/2024	63	62	53

Start Date	L_{den} (00:00 - 00:00) dB	$L_{Aeq,16hour}$ (07:00 - 23:00) dB	L_{night} (23:00 - 07:00) dB
27/08/2024	63	61	50
28/08/2024	62	62	52
29/08/2024	67	67	55
30/08/2024	61	58	44
31/08/2024	51	47	43
01/09/2024	50	46	47
02/09/2024	62	61	55
03/09/2024	63	62	54
04/09/2024	63	62	47
05/09/2024	56	53	51
06/09/2024	56	50	42
07/09/2024	55	54	50
08/09/2024	61	61	52
09/09/2024	63	62	55
10/09/2024	64	63	55
11/09/2024	64	62	55
12/09/2024	64	62	56
13/09/2024	64	62	51
14/09/2024	62	62	50
15/09/2024	62	61	53

Appendix D – Weather Analysis

This section outlines the recorded weather data as per the nearby Dublin Airport weather station accessible from https://www.met.ie/ .

Table 7 below outlines the details of the weather analysis undertaken for the 92-day monitoring period. In general periods of unfavourable weather had negligible impact on the noise measurement data.

Table 7: Weather Analysis

Start Date	Met Eireann Weather Recorded at Dublin Airport	Impact on Measurement Data
16/06/2024	Good	No impact
17/06/2024	Good	No impact
18/06/2024	Good	No impact
19/06/2024	Good	No impact
20/06/2024	Good	No impact
21/06/2024	Good	No impact
22/06/2024	Good	No impact
23/06/2024	Good	No impact
24/06/2024	Good	No impact
25/06/2024	Good	No impact
26/06/2024	Good	No impact
27/06/2024	Occasional high winds	No impact
28/06/2024	Occasional high winds	No impact
29/06/2024	Rain	No impact
30/06/2024	Good	No impact
01/07/2024	Occasional high winds	No impact
02/07/2024	Good	No impact
03/07/2024	Occasional high winds	No impact
04/07/2024	Occasional high winds	No impact
05/07/2024	Good	No impact
06/07/2024	Occasional high winds	No impact
07/07/2024	Good	No impact
08/07/2024	Good	No impact
09/07/2024	Rain, Occasional high winds	No impact
10/07/2024	Occasional high winds	No impact
11/07/2024	Occasional high winds	No impact
12/07/2024	Good	No impact
13/07/2024	Good	No impact
14/07/2024	Good	No impact
15/07/2024	Good	No impact
16/07/2024	Good	No impact
17/07/2024	Good	No impact
18/07/2024	Good	No impact

Start Date	Met Eireann Weather Recorded at Dublin Airport	Impact on Measurement Data
19/07/2024	Good	No impact
20/07/2024	Occasional high winds	No impact
21/07/2024	Good	No impact
22/07/2024	Rain	No impact
23/07/2024	Good	No impact
24/07/2024	Good	No impact
25/07/2024	Good	No impact
26/07/2024	Good	No impact
27/07/2024	Good	No impact
28/07/2024	Good	No impact
29/07/2024	Good	No impact
30/07/2024	Good	No impact
31/07/2024	Good	No impact
01/08/2024	Good	No impact
02/08/2024	Occasional high winds	No impact
03/08/2024	Good	No impact
04/08/2024	Occasional high winds	No impact
05/08/2024	Occasional high winds	No impact
06/08/2024	Good	No impact
07/08/2024	Good	No impact
08/08/2024	Occasional high winds	No impact
09/08/2024	Occasional high winds	No impact
10/08/2024	Good	No impact
11/08/2024	Good	No impact
12/08/2024	Occasional high winds	No impact
13/08/2024	Occasional high winds	No impact
14/08/2024	Good	No impact
15/08/2024	Good	No impact
16/08/2024	Good	No impact
17/08/2024	Good	No impact
18/08/2024	Good	No impact
19/08/2024	Occasional high winds	No impact
20/08/2024	Rain, Occasional high winds	No impact
21/08/2024	Occasional high winds	Notable impact on nighttime data
22/08/2024	Rain, Occasional high winds	Notable impact on nighttime data
23/08/2024	Rain, Occasional high winds	No impact
24/08/2024	Rain, Occasional high winds	No impact
25/08/2024	Occasional high winds	No impact
26/08/2024	Rain, occasional high winds	Some impact at nighttime
27/08/2024	Good	No impact
28/08/2024	Good	No impact

Start Date	Met Eireann Weather Recorded at Dublin Airport	Impact on Measurement Data
29/08/2024	Good	No impact
30/08/2024	Good	No impact
31/08/2024	Good	No impact
01/09/2024	Good	No impact
02/09/2024	Rain	No impact
03/09/2024	Good	No impact
04/09/2024	Rain, Occasional high winds	No impact
05/09/2024	Occasional high winds	No impact
06/09/2024	Occasional high winds	No impact
07/09/2024	Good	No impact
08/09/2024	Occasional high winds	No impact
09/09/2024	Occasional high winds	No impact
10/09/2024	Occasional high winds	No impact
11/09/2024	Rain, Occasional high winds	No impact
12/09/2024	Good	No impact
13/09/2024	Good	No impact
14/09/2024	Good	No impact
15/09/2024	Good	No impact