

# Noise Monitoring Report

January - March

2023

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# Executive Summary

This noise monitoring report is drafted for the period January - March 2023. This report consists of three parts: introduction to this report, general statistics related to the operations at Dublin Airport, and noise monitoring statistics per noise terminal. This executive summary briefly lists numbers related to the noise performance of Dublin Airport, these can be found in Table 1 and Table 2. In Table 1 the number of events from noise monitoring terminals (NMTs) which are directly overflowed are listed. These events are correlated aircraft noise events, they are coupled with a specific arriving or departing aircraft overflying the NMT. Table 2 shows in summary the average measured noise levels for the first quarter of 2023 for all operational NMTs. As one may expect, NMTs frequently overflowed (NMTs 1, 2, and 20) measure higher noise levels which are attributed to aircraft, in comparison to the other NMTs.



Figure 1: Runway Layout Dublin Airport

NMT	Number of correlated aircraft noise events			
	Description	Arrivals	Departures	Total
1	Arrivals Runway 10R, Departures Runway 28L	2,115	9,118	11,233
2	Arrivals Runway 28L, Departures Runway 10R	20,443	4,366	24,809
5	Arrivals Runway 16, Departures Runway 34	0	0	0
6	Arrivals Runway 34, Departures Runway 16	0	0	0
7	Arrivals Runway 10L, Departure Runway 28R	0	2	2
8	Arrival Runway 10L, Departure Runway 28R	0	0	0
10	Arrival Runway 10L, Departure Runway 28R	128	8,058	8,186
20	Arrivals Runway 28L, Departures Runway 10R	14,133	2,490	16,623

Table 1: Correlated aircraft noise events

NMT	Daytime noise level, LAeq, 16 h[dB]		Nighttime noise level, LAeq, 8 h[dB]	
	Total	Aircraft	Total	Aircraft
1	60.5	57.8	58.2	56.6
2	61.8	60.9	57.8	56.2
3	61.7	56.0	56.0	43.1
4	56.7	45.5	53.1	44.2
5	72.3	53.2	68.9	23.3
6	60.0	30.0	58.7	23.9
7	59.6	17.04	55.1	28.6
8	56.8	16.41	53.5	32.3
10	64.4	15.61	59.5	55.9
20	64.5	58.7	60.0	53.0

Table 2: Average measured noise levels

# Introduction

This half yearly, commissioned by Dublin Airport, presents a summary of the noise performance near Dublin Airport, for the period from January 1<sup>st</sup> to March 31<sup>st</sup> 2023.

To monitor aircraft noise levels and flight tracks near Dublin Airport, a Noise and Flight Track Monitoring System (NFTMS) is in place. This system, by Envirosuite, is composed of a feed from Air Traffic Control radar to capture the aircraft, and a series of Noise Monitoring Terminals (NMTs) which are installed in the area around the airport. In total, seven NMTs are in place:

- Bay Lane: (NMT 1: monitoring runway 28L departures and runway 10R arrivals)
- St. Doolaghs: (NMT 2: monitoring runway 10R departures and runway 28L arrivals)
- Bishopswood: (NMT 3: monitoring local area)
- Feltrim: (NMT 4: monitoring local area)
- Balcultry: (NMT 5: monitoring runway 34 departures and runway 16 arrivals)
- Artane: (NMT 6: monitoring runway 16 departures and runway 34 arrivals)
- County Hall: (NMT 7: monitoring runway 10L arrivals and runway 28R departures)
- Malahide Demesne: (NMT 8: monitoring runway 10L arrivals and runway 28R departures)
- St. Margaret's National School: (NMT 8: monitoring runway 10L arrivals and runway 28R departures)
- Oscar Pappa: (NMT 20: monitoring runway 10R departures and runway 28L arrivals)

This report presents the results of the measurements in the period from the start of January to the end of March 2023 for all NMT locations. The NMT locations are shown in Figure 2. General statistics of flight operations of Dublin Airport in the first quarter of 2023 are provided in the General Statistics section. Results specific to the measurements obtained at the various monitoring stations are presented in the Noise Monitoring Statistics section.

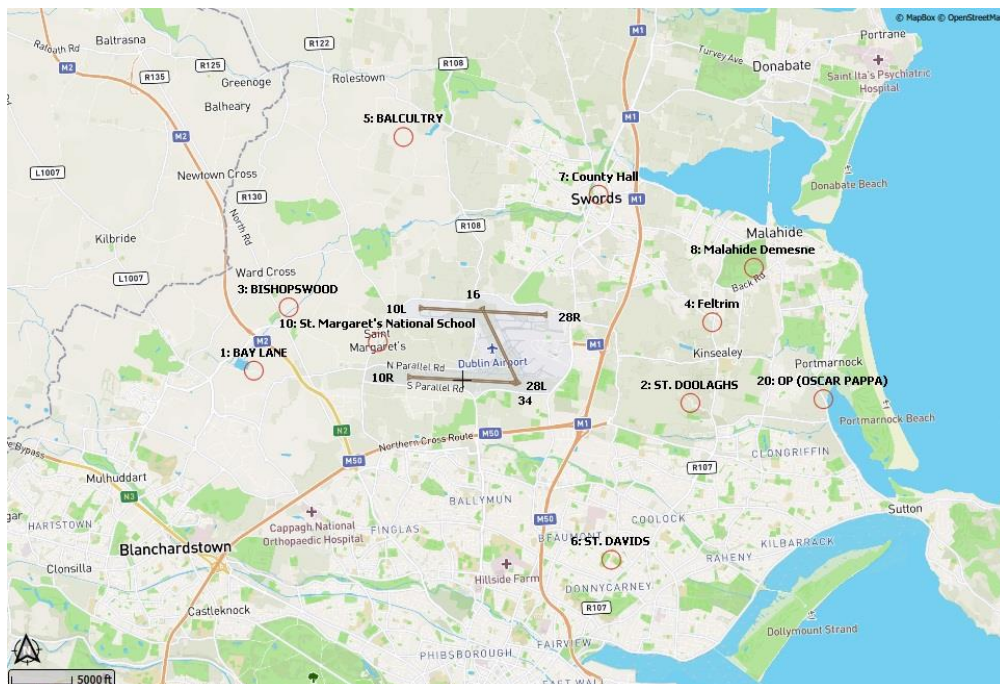


Figure 2: Noise Monitoring Terminal locations

# General Statistics

## Traffic

In the first quarter of 2023, Dublin Airport handled a total of 50,915 flights and 6,656,431 passengers. This is an increase of 35% in traffic and an increase of 60% in passenger numbers compared to the same period in 2022. Note that the number of movements includes both departures and arrivals. Figure 3, gives an hourly distribution of the movements for first quarter of 2023, compared to the hourly distribution of the same period in 2022.

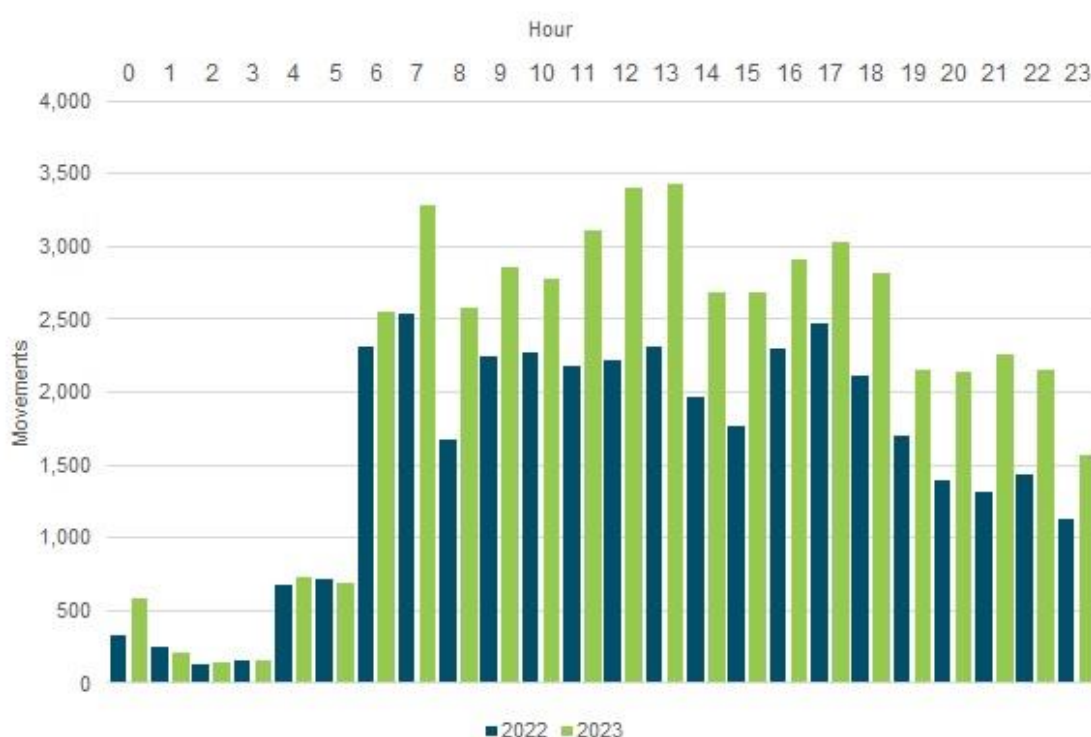


Figure 3: Hourly distribution of movements from January – March 2022 vs 2023

A wide variety of aircraft operate from Dublin Airport ranging from turboprop aircraft such as the ATR and Dash-8 to wide body jets like Boeing 777. However, majority of movements were performed using medium sized jets, with the Boeing 737 and Airbus A320 series aircraft accounting for more than 67% of the total. Figure 4 provides a more detailed overview of aircraft types. The aircraft types are divided into the categories: A/B and C/D. Table 3 on the next page list typical aircraft types belonging to these categories.

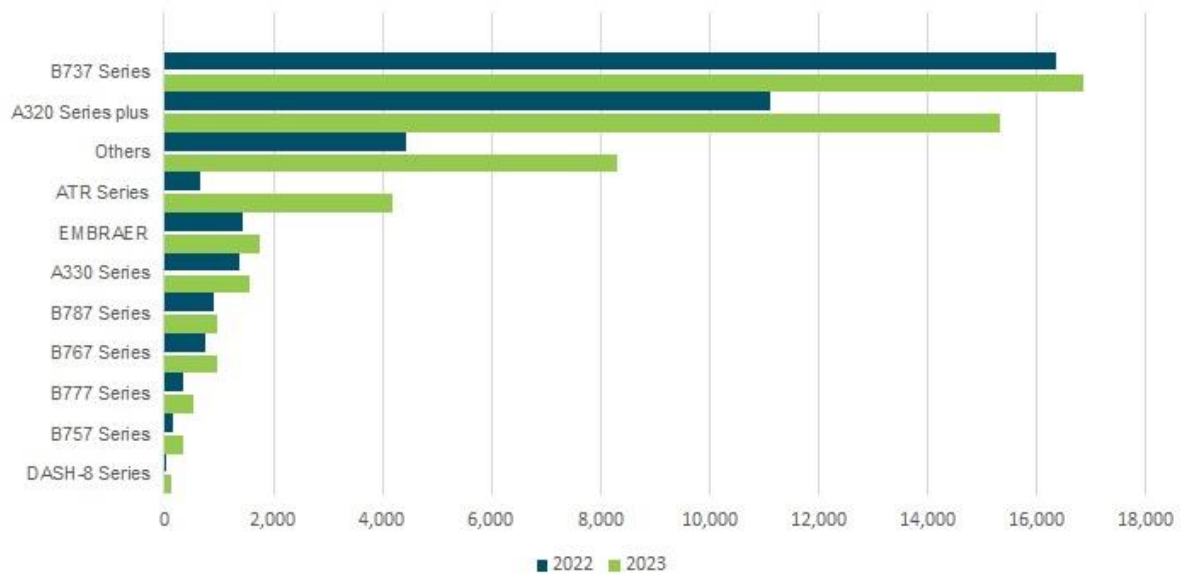


Figure 4: Aircraft type distribution January – March 2022 vs 2023

Aircraft category	Aircraft type:
A/B	Propellor aircraft
	Turboprop aircraft
	Whisper jets (aircraft like BAe-146 and Avro-Jet)
	Mostly small general aviation aircraft powered by piston engines
C/D	Airbus
	Boeing
	Bombardier Canadair Regional Jet (CRJ) - Series
	Business jets
	Embraer

Table 3: Aircraft type classification

## Track Adherence

There are eight environmental corridors at Dublin airport. For the first quarter of 2023, 97% of category C/D aircraft stayed within these corridors. Category A/B aircraft may operate outside these.

## Runway use and weather

Figure 5 shows that Runway 28L/R, the runway for aircraft landing and departing in the westerly direction, handled 82% of all movements in the period January to March 2023 versus 81% in 2022. Runway 10L/R, the runway for aircraft landing and departing in the easterly direction, was 18% of the movements in the period January to March 2023 versus 16% in 2022. The remaining percentage of the movements in 2022 and 2023 took place on the cross runway 16/34.

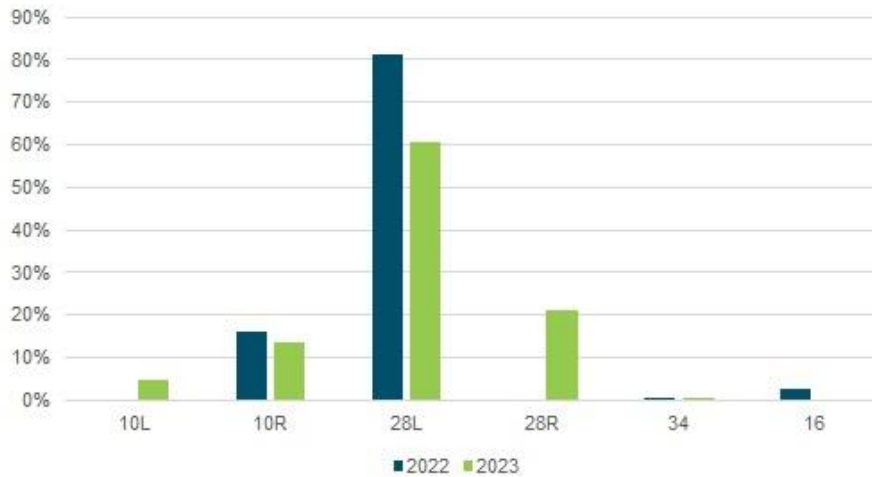


Figure 5: Runway usage, January – March 2022 vs 2023

## Overflying height analysis

The measured sound levels depend on the height at which the NMT is overflown. Generally, higher overflying altitudes result in lower recorded sound levels. For NMT's, which are directly overflown, the average overflying height is shown in Table 4 below for the first quarter of 2022 and 2023. In which A and D stand for arrivals and departures respectively.

NMTs	Height (ft)			
	2022		2023	
	A	D	A	D
NMT1	680	2,551	720	2,488
NMT2	870	2,638	866	2,464
NMT3	700	2,538	624	2,230
NMT4	1,000	2,941	1,007	2,691
NMT5	880	5,204	2,805	3,000
NMT6	2,780	3,205	0	2,228
NMT7	0	0	3,854	4,174
NMT8	0	0	1,123	3,023
NMT10	0	0	0	1,205
NMT20	1,530	3,546	1,540	3,342

Table 4: Average overflight height



## Busiest day flight tracks

The images below are screenshots of tracks from ANOMS NFTMS system. The images show arrival (red) and departure (green) tracks for the busiest day in each month of the first quarter split into traffic flowing easterly runway 10L/10R and westerly runway 28L/28R.

### January 2023 Easterly operations

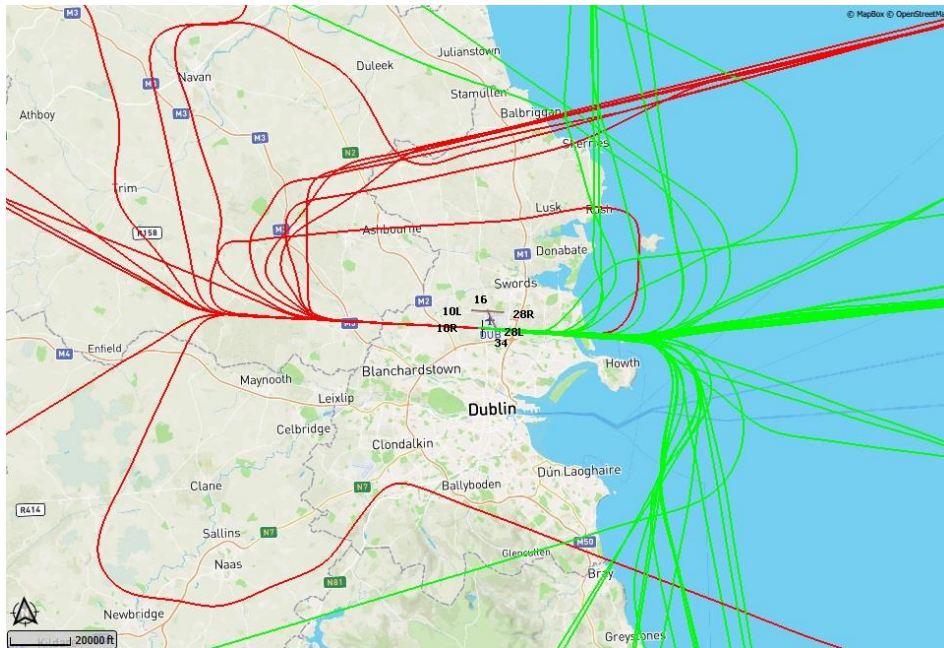


Figure 6: 63 Easterly operations on 10<sup>th</sup> January 2023

### January 2023 Westerly operations

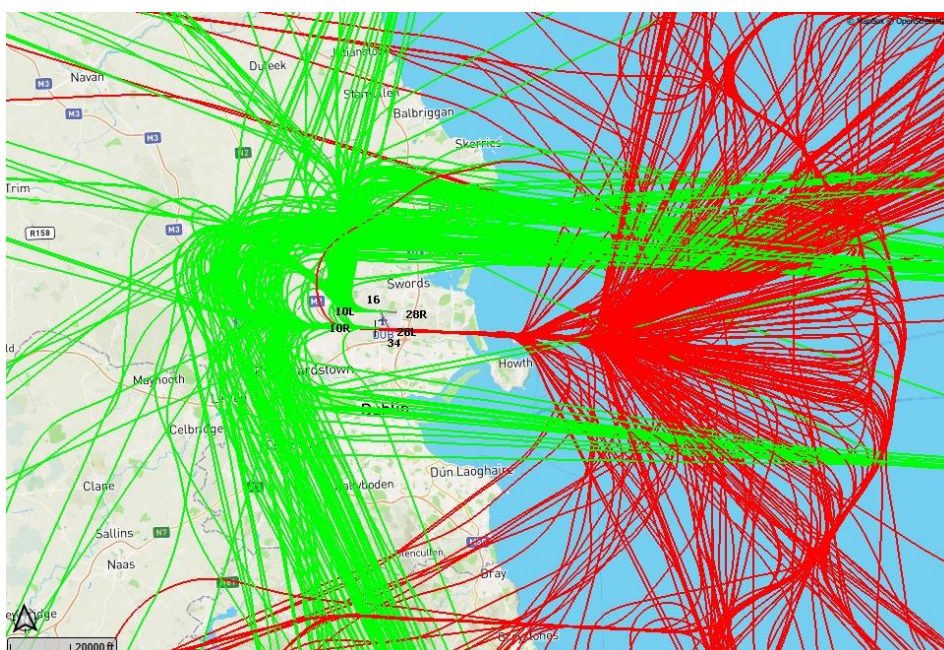


Figure 7: 657 Westerly operation on 6<sup>th</sup> January 2023



## February 2023 Easterly operations

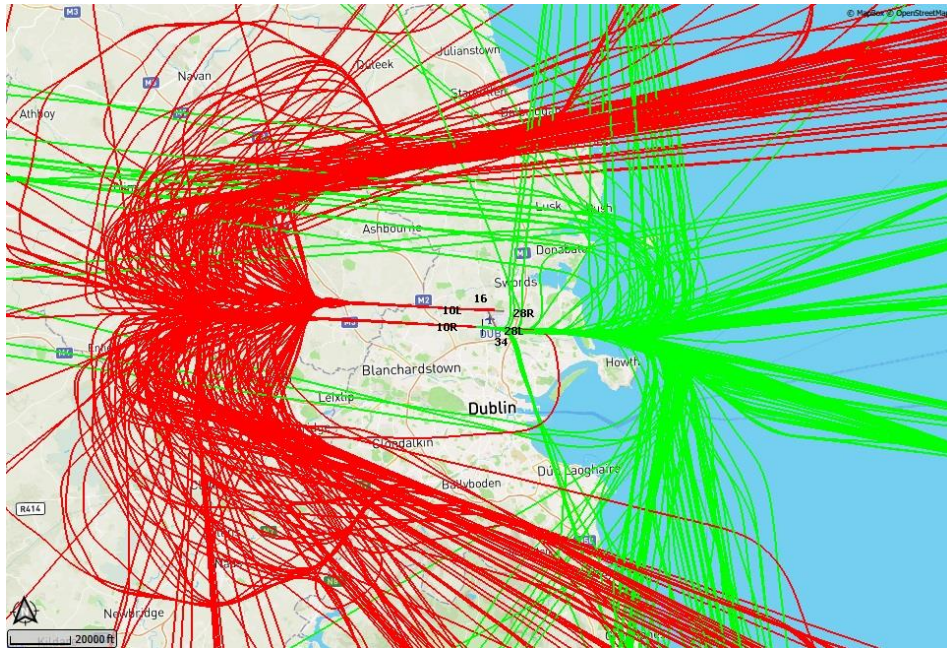


Figure 8: 632 Easterly operations on 26<sup>th</sup> February 2023

## February 2023 Westerly operations

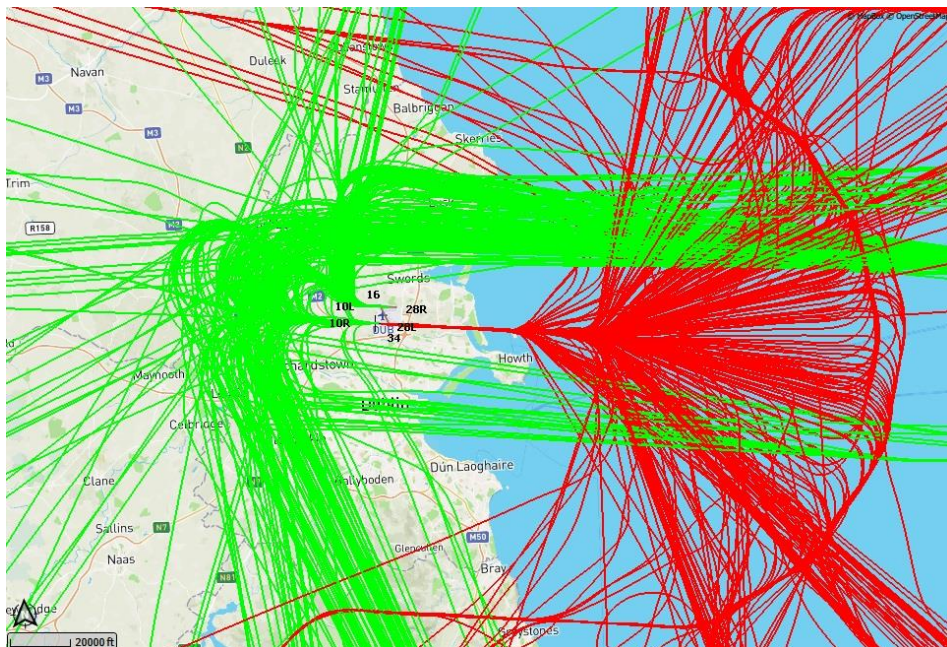


Figure 9: 703 Westerly operations on 10<sup>th</sup> February 2023



### March 2023 Easterly operations

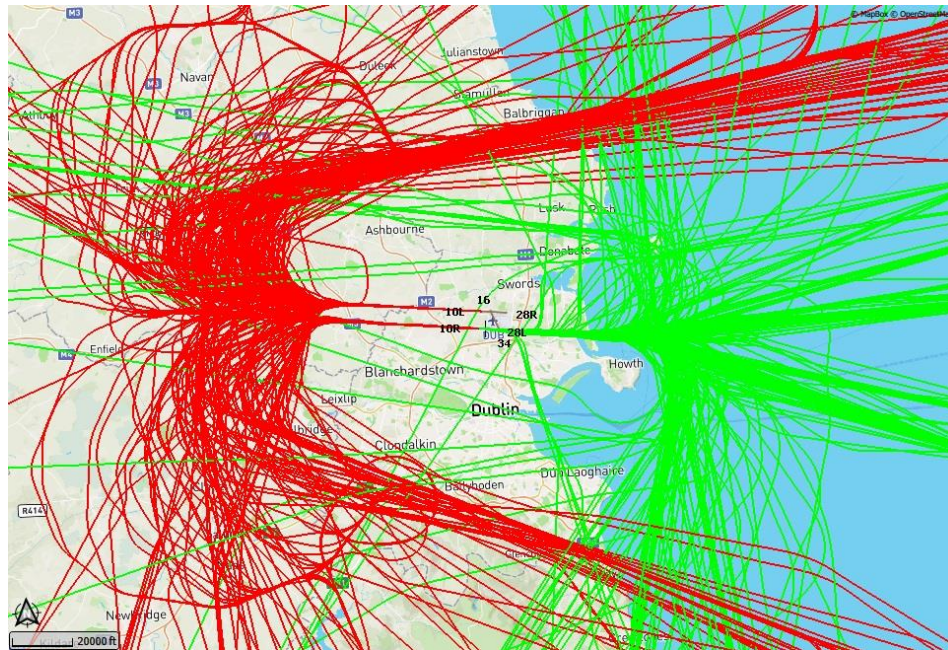


Figure 10: 614 Easterly operations on 26<sup>th</sup> March 2023

### March 2023 Westerly operations

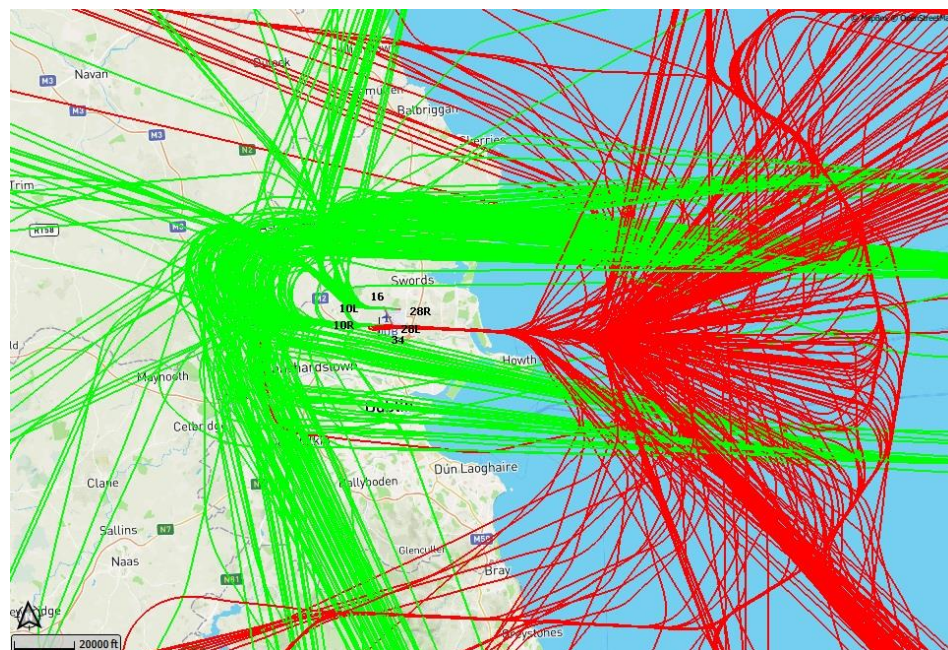


Figure 11: 685 Westerly operations on 19<sup>th</sup> March 2023

# Noise Monitoring Statistics

## Reading guide

The noise values presented in this report are values based on measurements, these values will differ from noise contours produced by computer modelling and are not directly comparable. Noise contours produced by computer modelling are typically based on an average summer or annual day and include all aircraft movements rather than those which produce correlated noise events.

The measured noise values are obtained from Noise Monitoring Terminals (NMTs). An upgraded Noise and Flight Track Monitoring System (NFTMS) with all new NMTs, provided by Envirosuite, has been commissioned by DAA as of 2017 to monitor the noise performance of Dublin Airport. This system subject to a further upgrade in Q1 2021 and further upgrades and expansions of the system are being considered.

These NMTs are set to record continuously and to trigger a noise event when two conditions are met. The first condition is the threshold level. The threshold level needs to be exceeded before recording is initiated. The threshold levels are continuously adjusted by Envirosuite to ensure maximum correlation between noise and individual operations. The second condition is the length of the recorded noise events. The recorded noise events should last for at least 10 seconds. Due to its proximity to agricultural, roads, and/or urban areas, NMTs can be triggered not just by aviation noise. It is for this reason the system is designed to correlate a noise event with an aircraft departing or landing. Similarly, the system can detect when the noise originates from a weather event, such as thunder or other stormy conditions.

Noise measurements are classified in three categories: aircraft, community, and weather. The community category, or normal human activity, includes all noise events that are not categorized as aircraft or weather. The measurement of total noise includes all three noise categories.

## Noise levels calculation methodology

The noise monitoring system logs, per correlated aircraft event, the duration and measures the noise level of the event, which is later converted to LAeq, 1 hour. This is the sound level, in decibels, equivalent to the total A-weighted sound energy of one hour. Average noise levels, for a reference duration, are derived from LAeq, 1 hour. The four noise levels are used in this report are:

- LAeq, 16 h, average daytime noise levels: - The LAeq, 16 h is determined by averaging the aircraft noise levels per month between 07:00 and 23:00, hence 16 hours.
- LAeq, 8 h, average nighttime noise levels: - The LAeq, 8 h is determined by averaging the aircraft noise levels per month between 23:00 and 07:00, hence 8-hour equivalent.
- LAeq, average hourly noise levels: - Same methodology applies for LAeq, compared to LAeq, 16 h and LAeq, 8 h, instead an average is taken per hour over a half year period instead of per month.
- LMax: - LMax indicates the maximum recorded noise level per correlated aircraft-noise event, while the average noise levels indicate the average noise levels for a reference duration.
- LMax distribution: This distribution is determined by determining the number of occurrences per 3 dB bracket, since every 3 dB increase is a doubling in sound level.

## Average NMT figures

The following graphs presented below display an Average value measured per NMT between the reporting period from January 1<sup>st</sup> up to and including March 31<sup>st</sup> 2023. The categories are as followed:

Average monthly L<sub>Amax</sub> noise levels per NMTs are shown in Figure 12

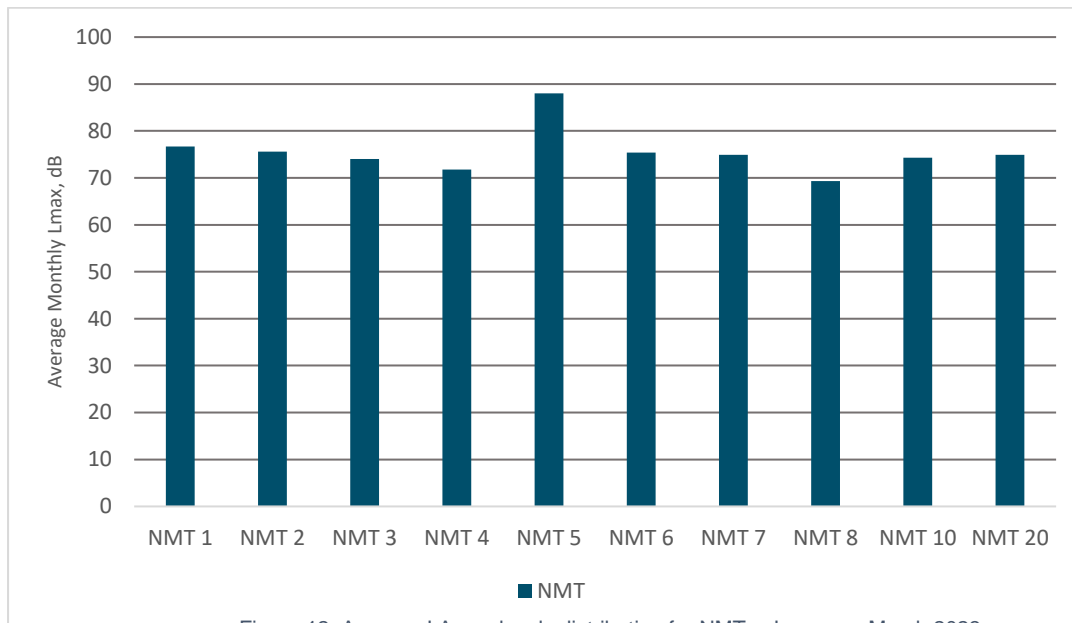


Figure 12: Average L<sub>Amax</sub> levels distribution for NMTs, January – March 2023

Average monthly L<sub>Amax</sub> noise levels per NMT for departing and arriving aircraft.

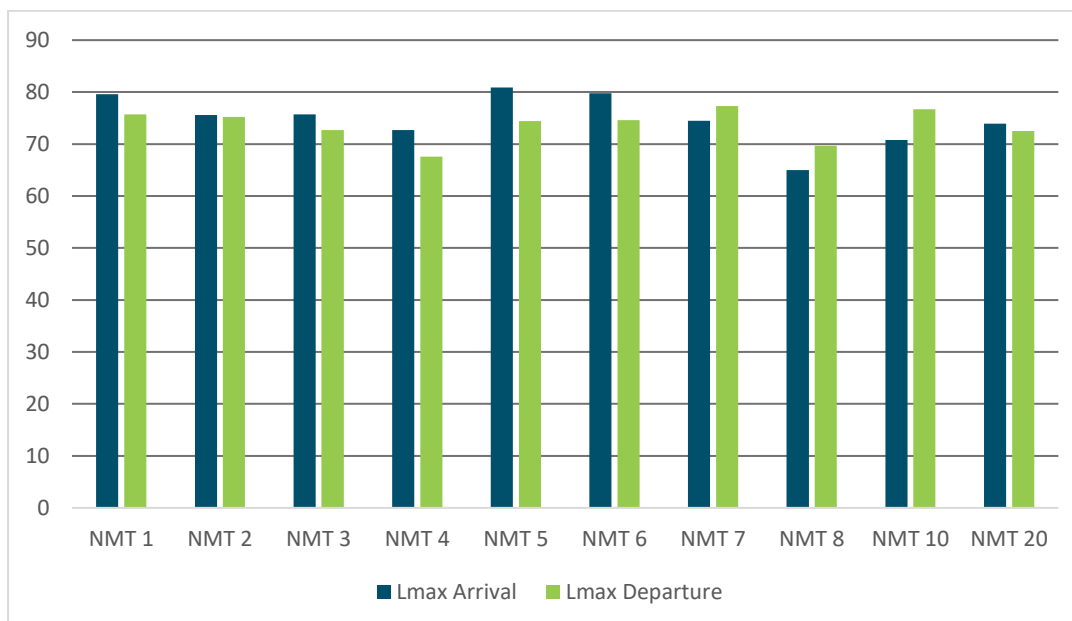


Figure 13: Average L<sub>Amax</sub> levels distribution for NMTs for arriving and departing aircraft, January – March 2023

Figure 14 presents the average noise levels measured at by all the NMTs for this reporting period during daytime which is defined as 07:00 in the morning to 22:59 in the evening. This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented per NMT.

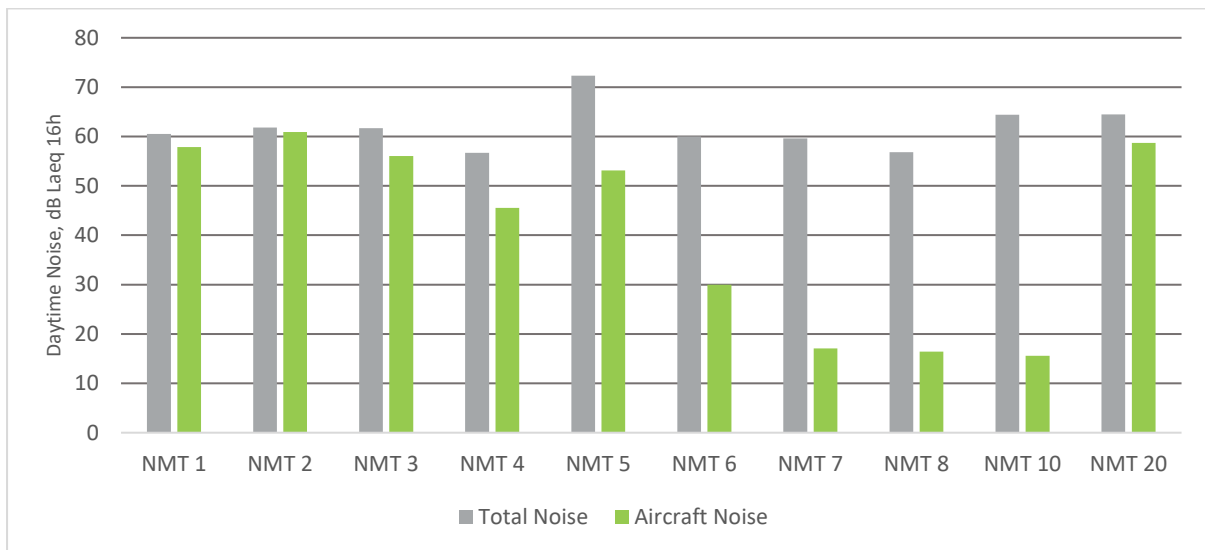


Figure 14: Averaged daytime noise levels per NMTs, January – March 2023

Noise levels during the night are determined using a similar method as described above. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 9 presents these results per NMT.

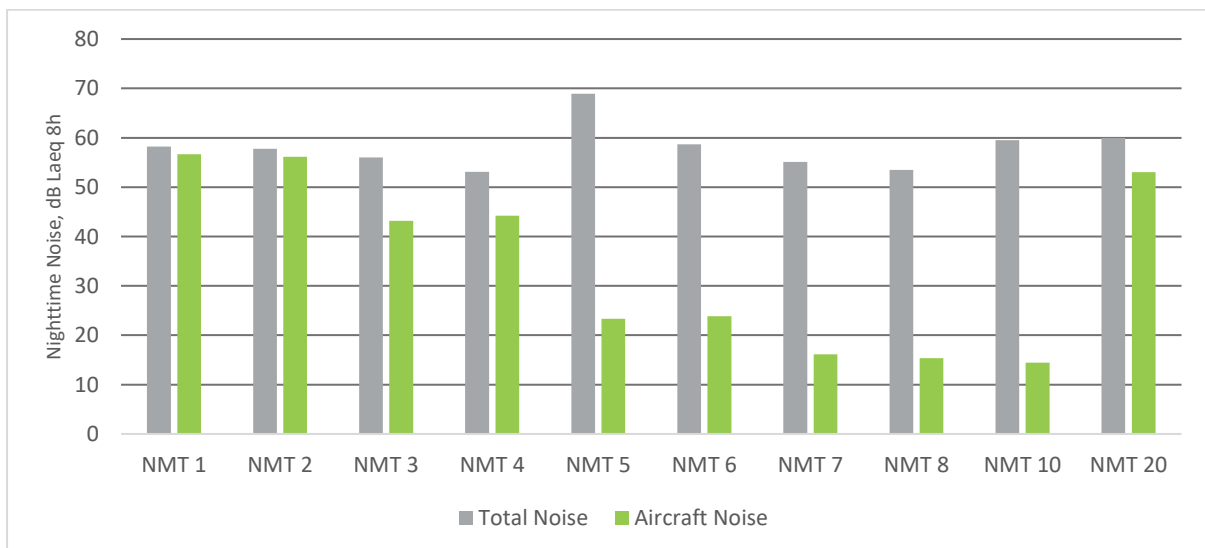


Figure 15: Averaged nighttime noise levels per NMTs, January - March 2023



# NMT 1: Bay Lane

Noise Monitoring Terminal 1 ('Bay Lane') is located west of Dublin Airport, see Figure 16 below, under the extended runway centreline of runway 28L. Its purpose is to monitor runway 28L departures and runway 10R arrivals. The resulting data for NMT 1 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

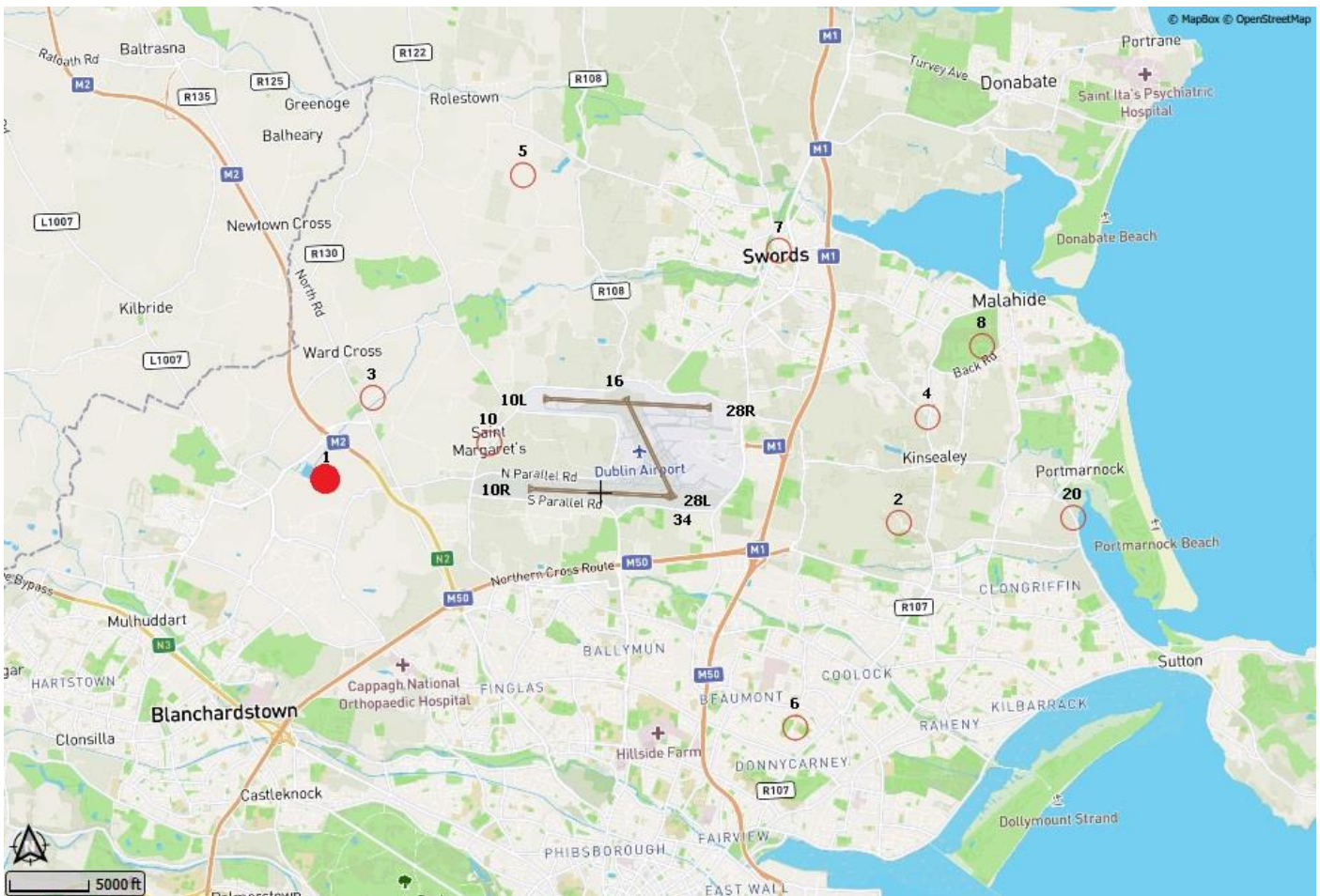


Figure 16: Noise Monitoring Terminal Bay Lane Location

## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

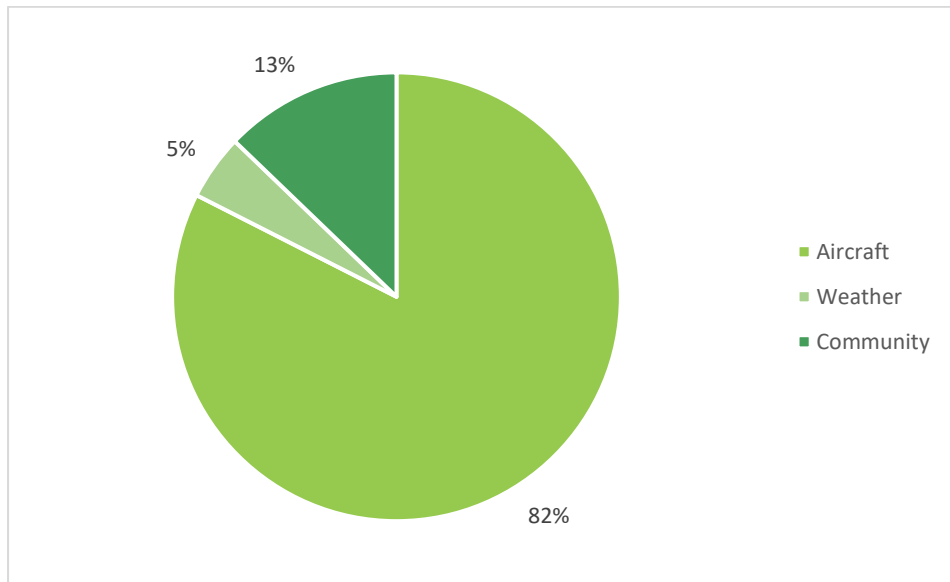


Figure 17: NMT 1 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 1: Bay Lane is presented in Figure 18.

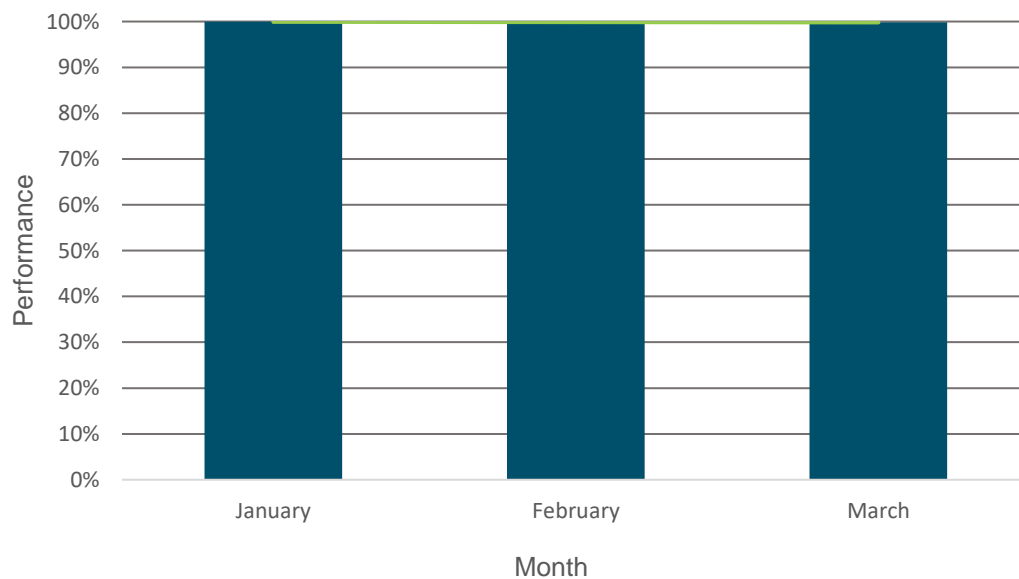


Figure 18: Operational status of NMT1, January – March 2023



## Noise Levels

Figure 19 presents the average noise levels measured at NMT 1 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

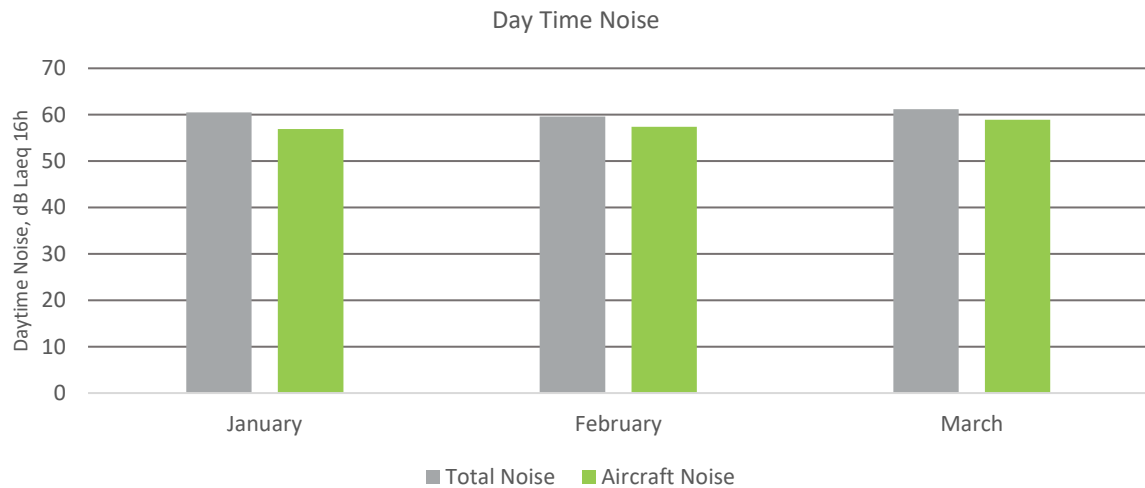


Figure 19: Averaged daytime noise levels for NMT 1, January – March 2023

Noise levels during the night are determined using a similar method as mentioned above. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 20 presents these results monthly.

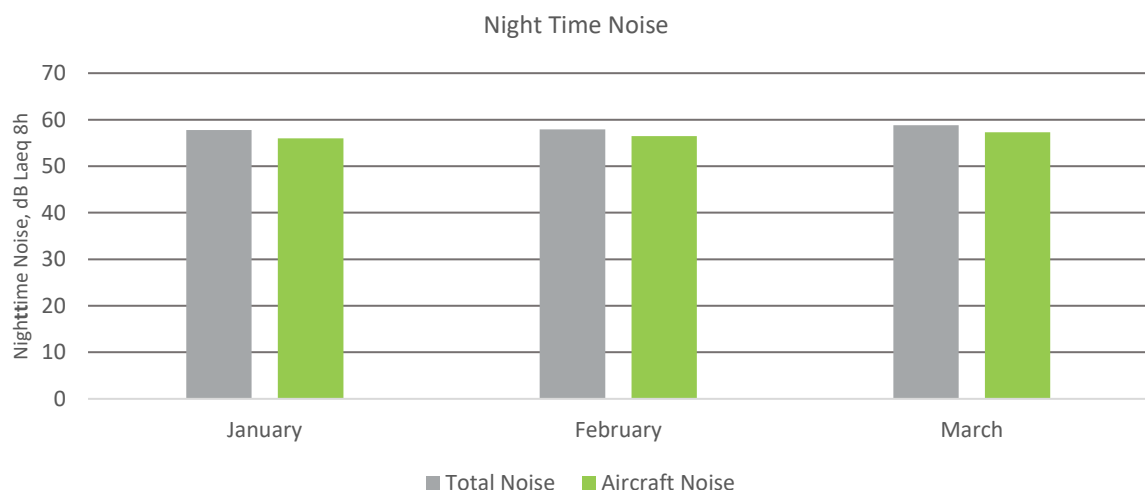


Figure 12: Averaged nighttime noise levels for NMT 1, January – March 2023

The hourly noise distribution at NMT 1 as shown in Figure 21.

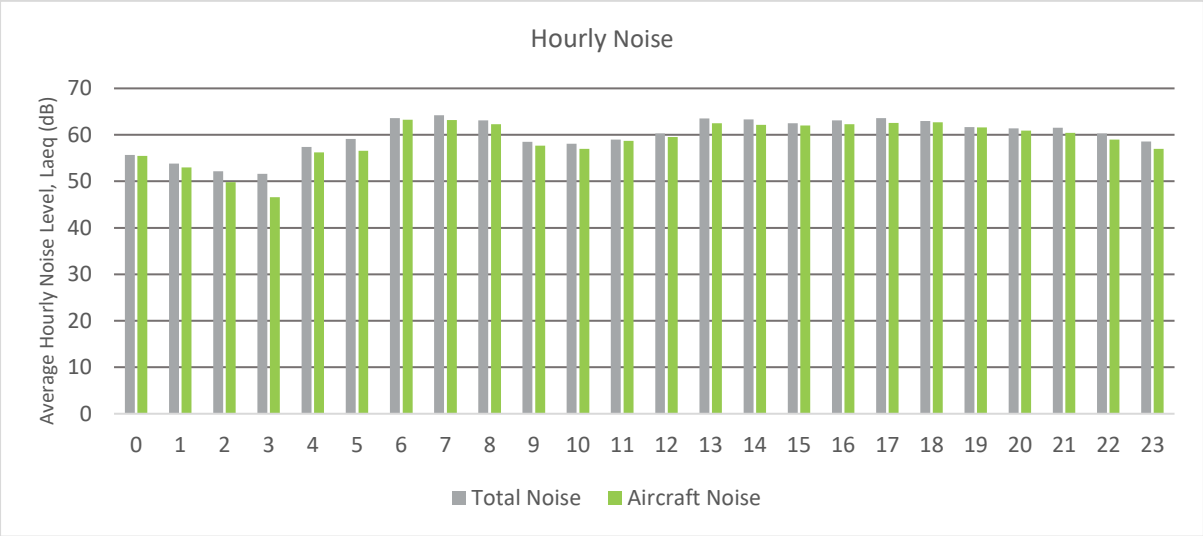


Figure 13: Averaged hourly noise levels for NMT 1, January - March 2023

Figure 22 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT1.

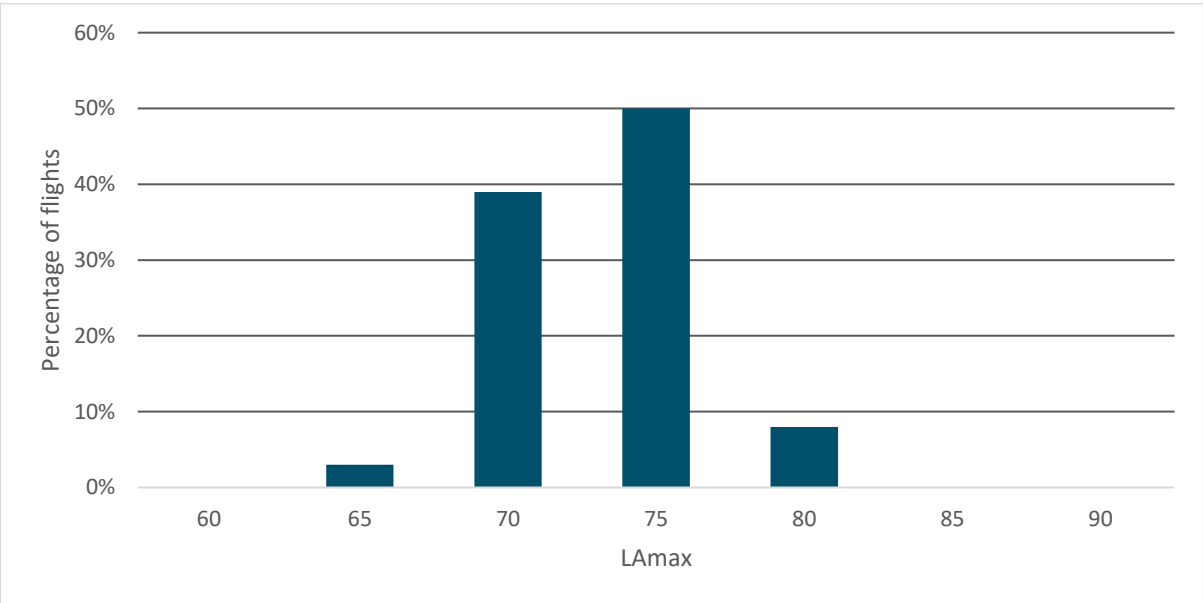


Figure 14: LAmax levels distribution for NMT 1, January – March 2023

Table 5 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 1.

Aircraft Type	Max dB	Total Count
A343	84.9	1
B764	83.2	46
A333	81.4	131
B77L	81	35
A35K	80.9	1
B733	80.1	3
B77W	80.1	129
B78X	79.4	9
B789	78.7	44
B739	77.7	8

Table 5: LAmax by aircraft types correlated to NMT 1, January - March 2023

# NMT 2: St. Doolaghs

Noise Monitoring Terminal 2 ('St. Doolaghs') is located east of Dublin Airport, see Figure 23 below, under the extended runway centreline of runway 10R. Its purpose is to monitor runway 10R departures and runway 28L arrivals. The resulting data for NMT 2 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

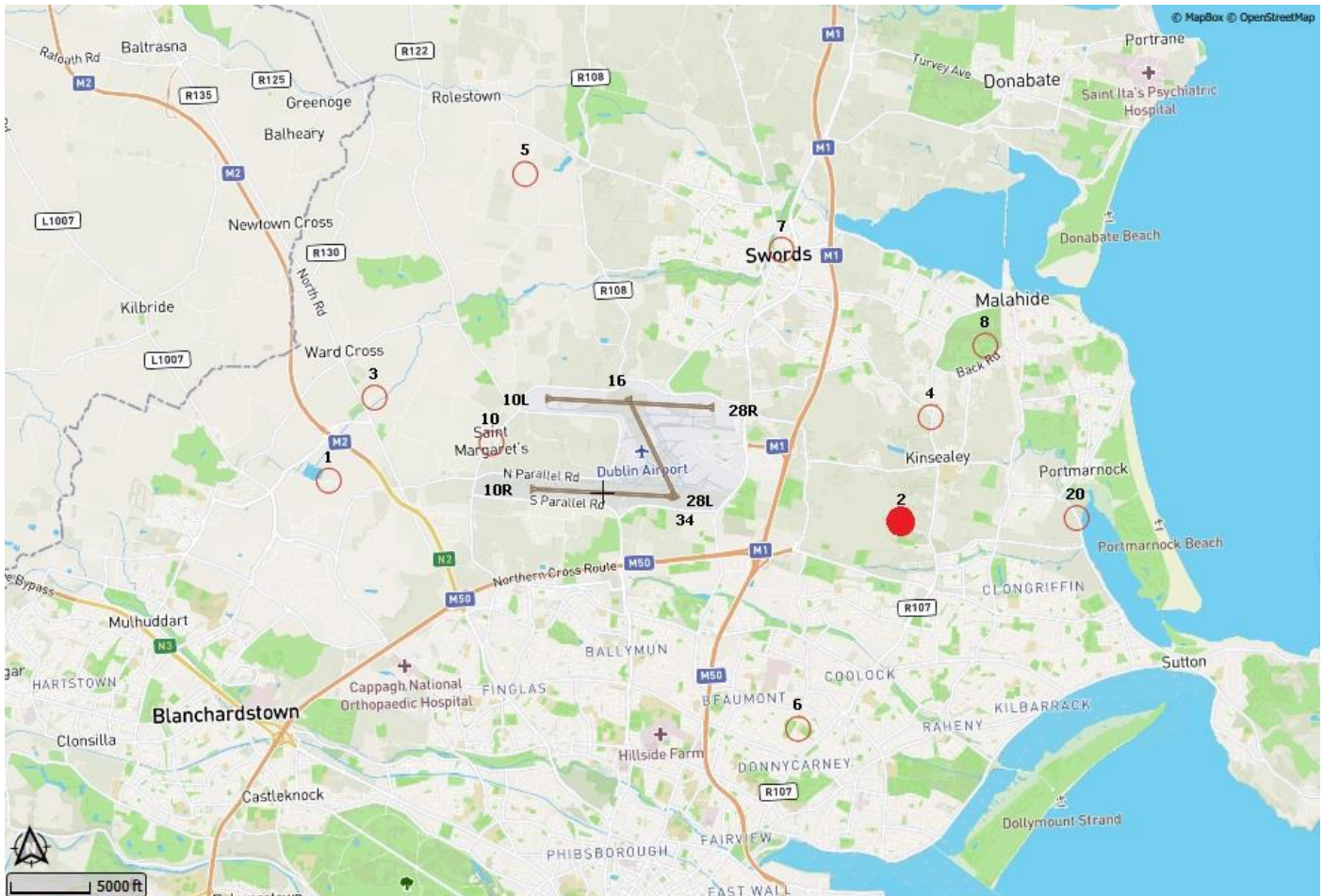


Figure 15: Noise Monitoring Terminal St. Doolaghs Location

## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

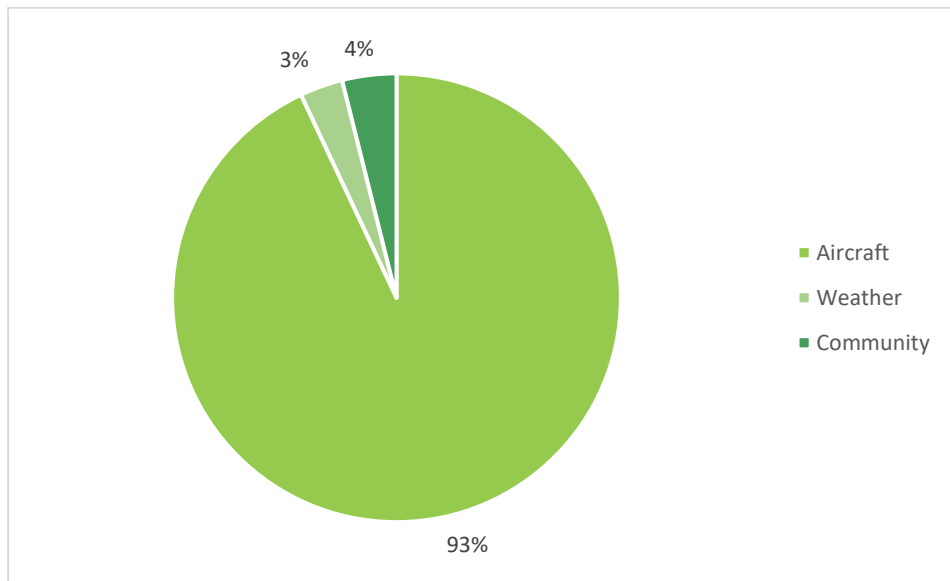


Figure 24: NMT 2 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 2: St. Doolaghs is presented in Figure 25.

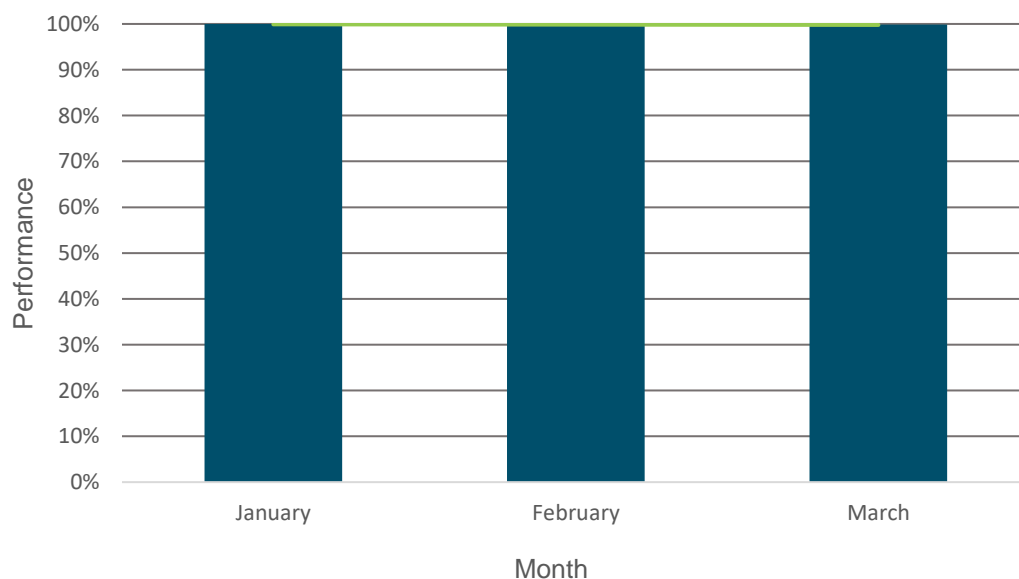


Figure 25: Operational status of NMT 2, January – March 2023

## Noise Levels

Figure 26 presents the average noise levels measured at NMT 2 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

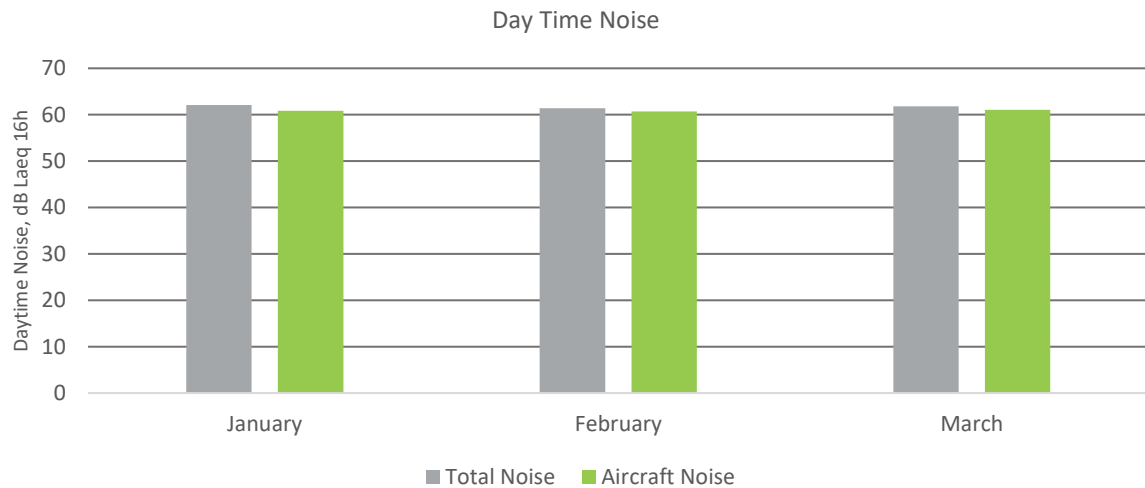


Figure 26: Averaged daytime noise levels for NMT 2, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 27 presents these results monthly.

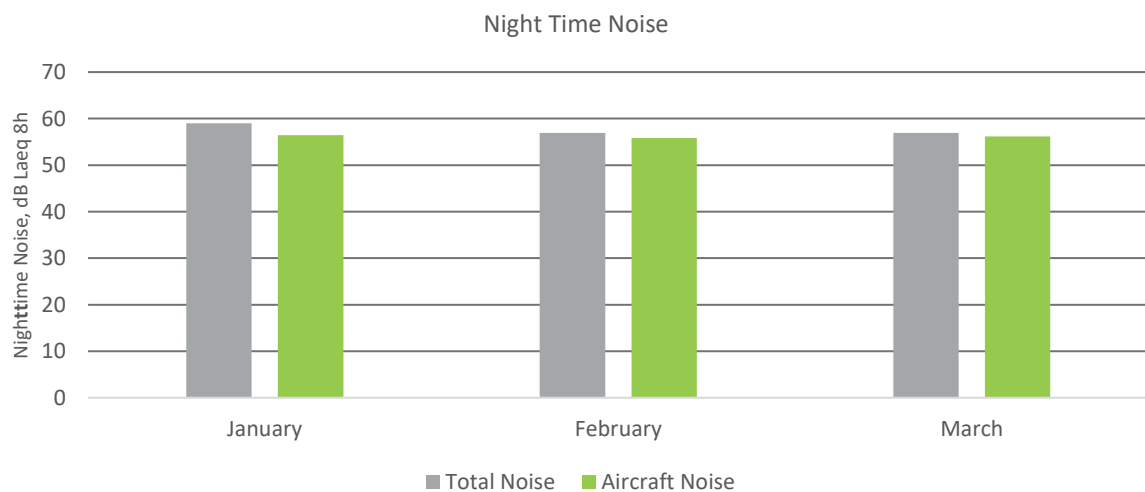


Figure 27: Averaged nighttime noise levels for NMT 2, January – March 2023

The hourly noise distribution at NMT 2 as shown in Figure 28.

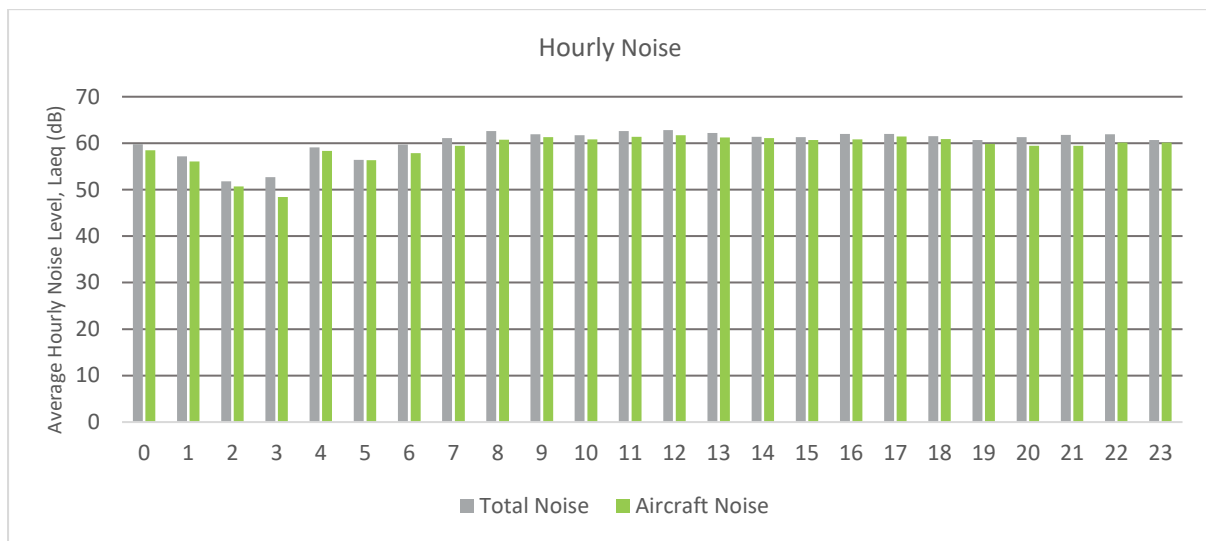


Figure 28: Averaged hourly noise levels for NMT 2, January – March 2023

Figure 29 shows the L<sub>Amax</sub> distribution for aircraft noise for the first quarter of 2023 for NMT 2.

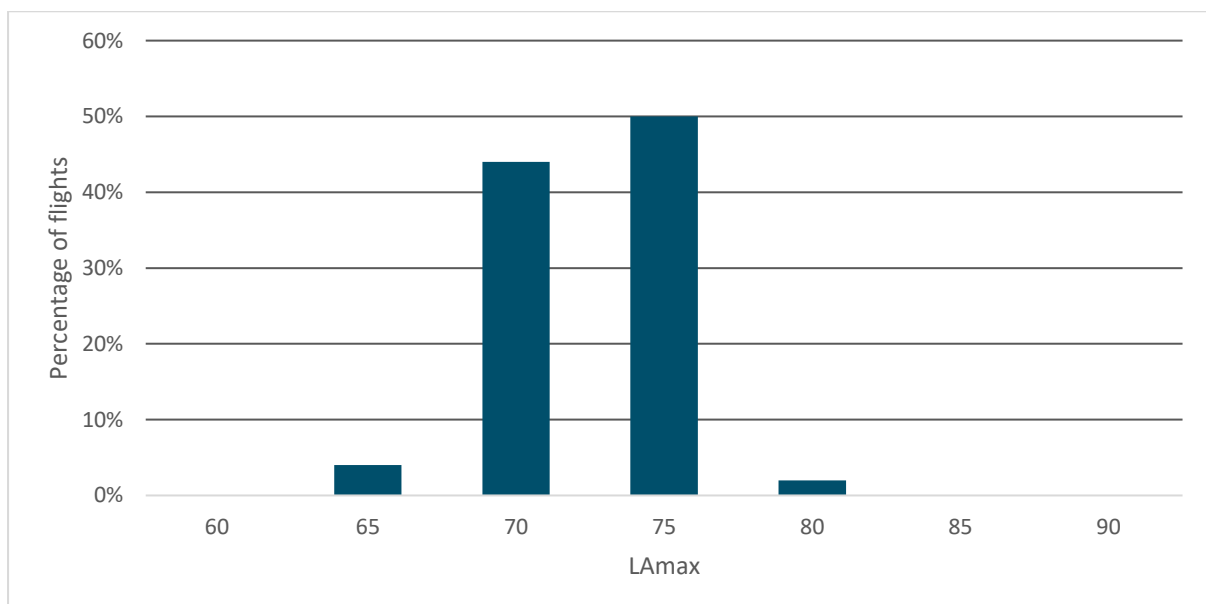


Figure 29: L<sub>Amax</sub> levels distribution for NMT 2, January – March 2023

Table 6 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 2.

Aircraft Type	Max dB	Total Count
B764	79.1	262
A333	78.5	723
B77W	78.5	214
B734	78.2	72
B77L	78.2	38
A332	77.7	48
B733	77.7	8
A35K	77.4	5
E121	77.1	1
A306	76.6	12

Table 6: LAmax by aircraft types correlated to NMT 2, January - March 2023



## NMT 3: Bishopswood

Noise Monitoring Terminal 3 ('Bishopswood') is located west of Dublin Airport and north of flightpath for runway 10R/28L, see Figure 30 below. Its purpose is to monitor aircraft noise levels in the local area. The resulting data for NMT 3 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

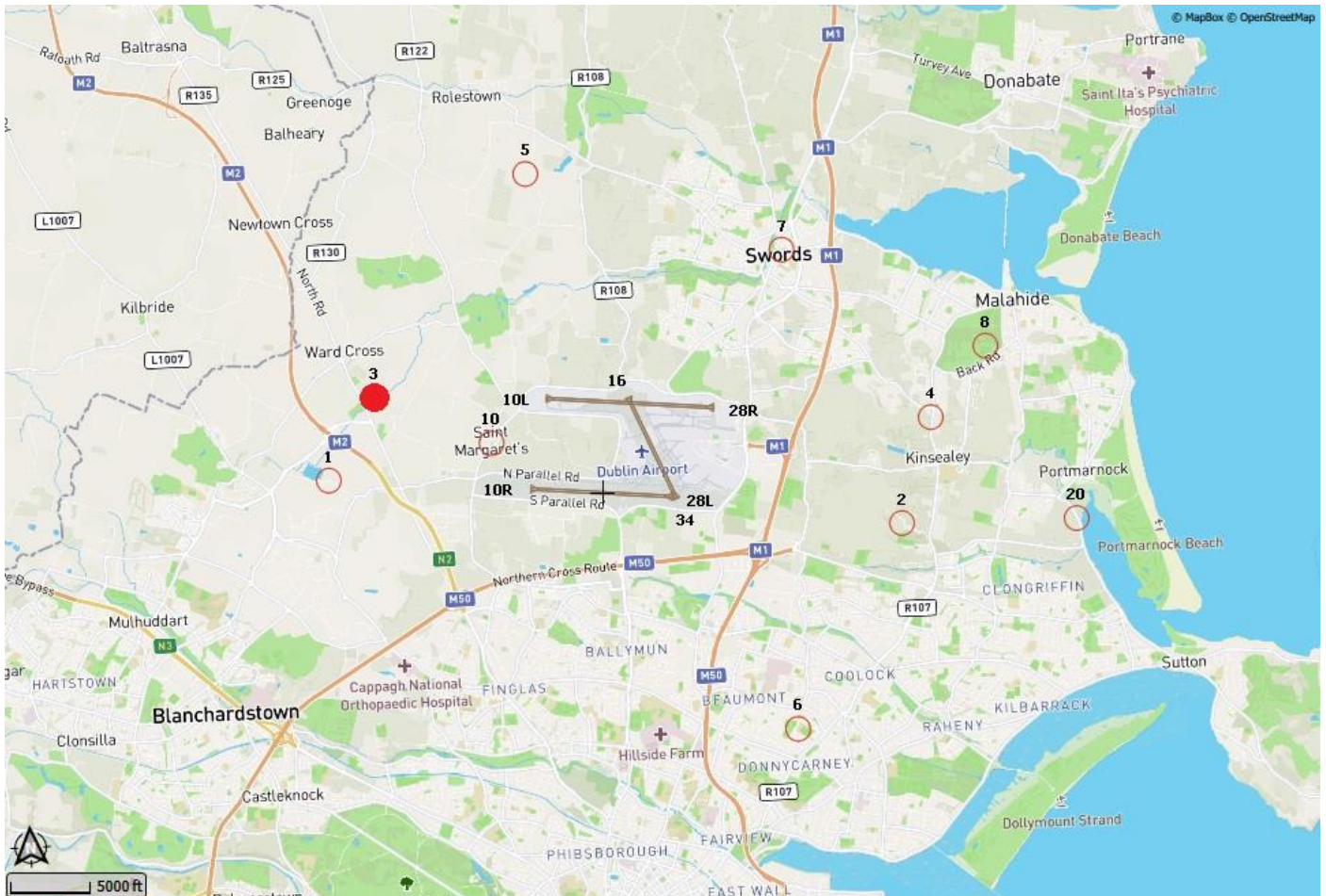


Figure 30: Noise Monitoring Terminal Bishopswood Location

## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

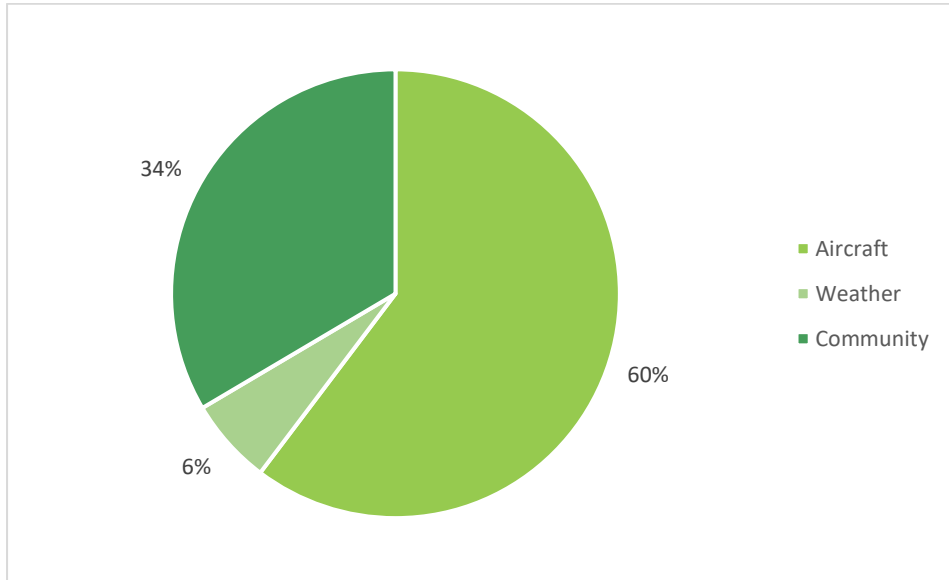


Figure 16: NMT 3 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 3: Bishopswood is presented in Figure 32.

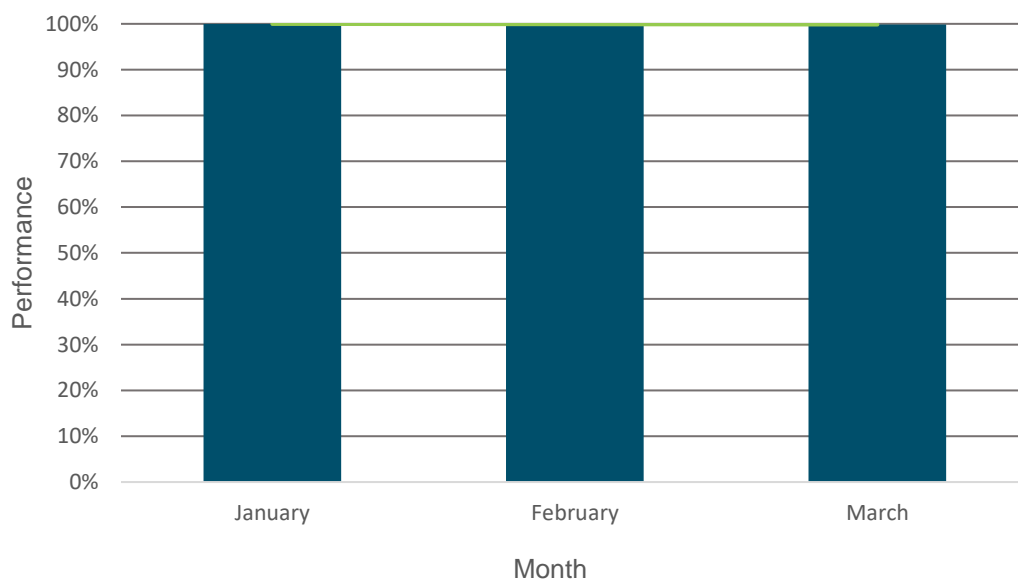


Figure 17: Operational status of NMT 3, January – March 2023

## Noise Levels

Figure 33 presents the average noise levels measured at NMT 3 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

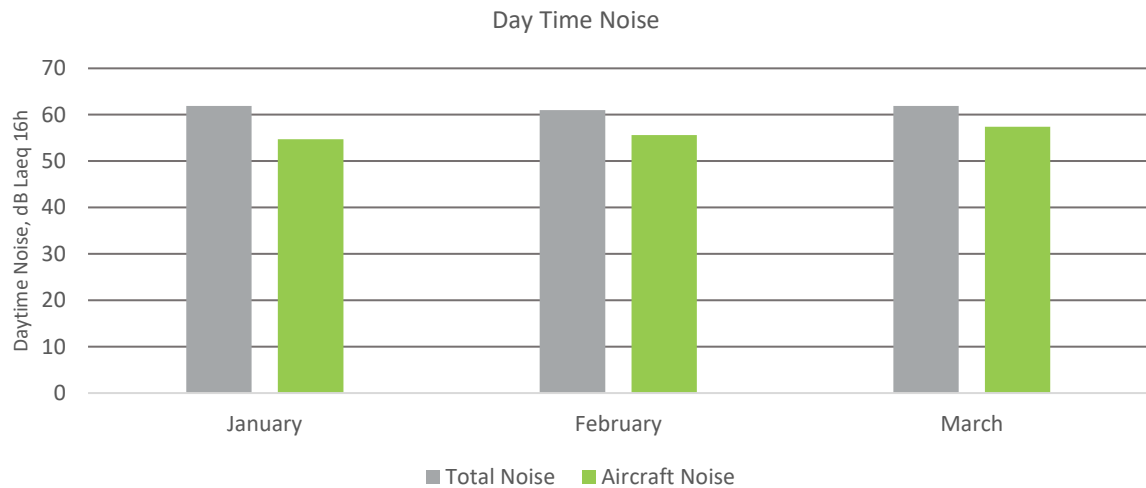


Figure 18: Averaged hourly noise levels for NMT 3, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 34 presents these results monthly.

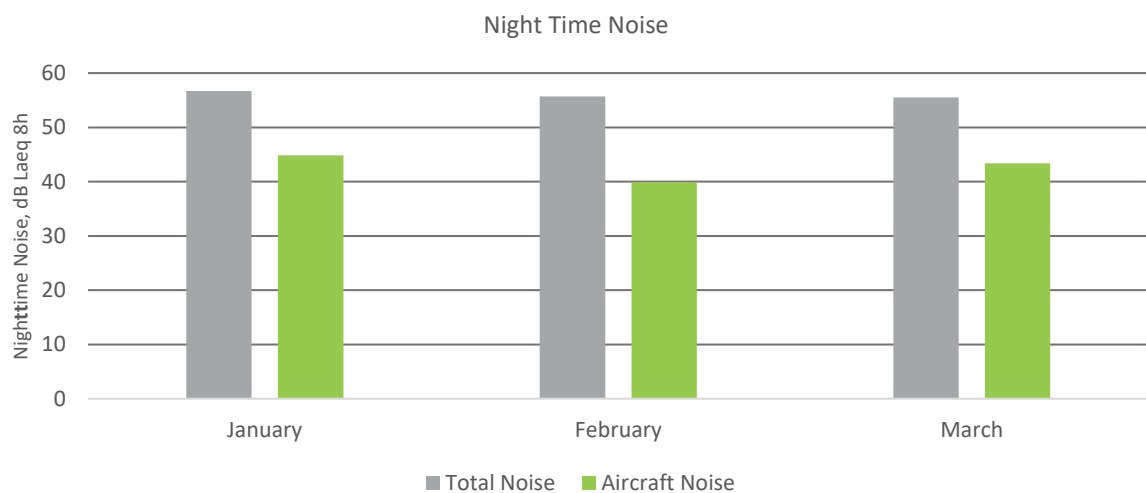


Figure 3419: Averaged nighttime noise levels for NMT 3, January – March 2023

The hourly noise distribution at NMT 3 as shown in Figure 35.

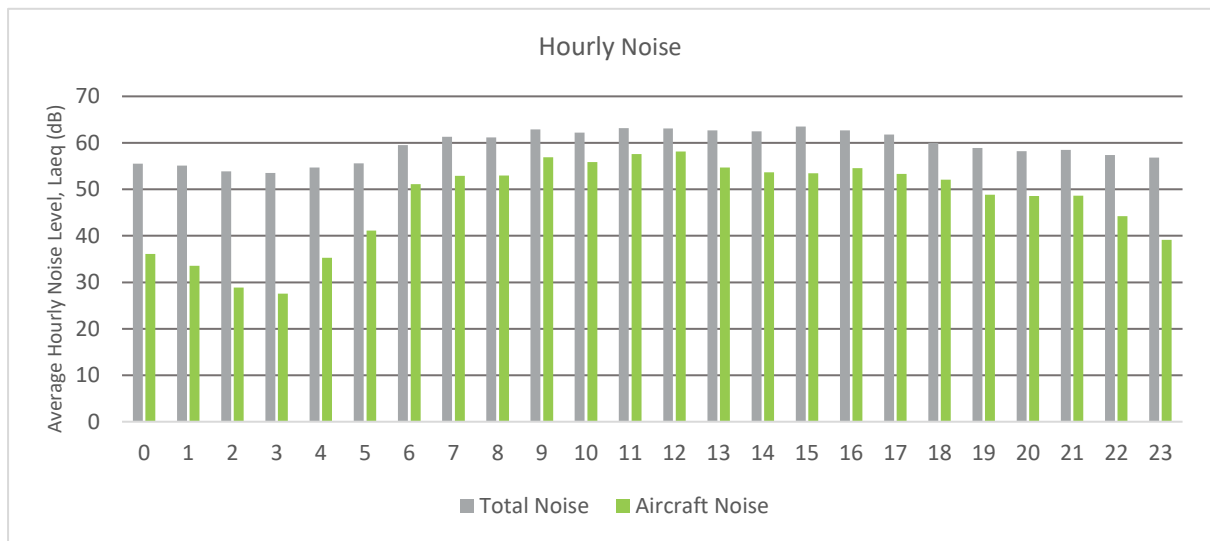


Figure 20: Averaged hourly noise levels for NMT 3, January – March 2023

Figure 36 shows the L<sub>Amax</sub> distribution for aircraft noise for the first quarter of 2023 for NMT 3.

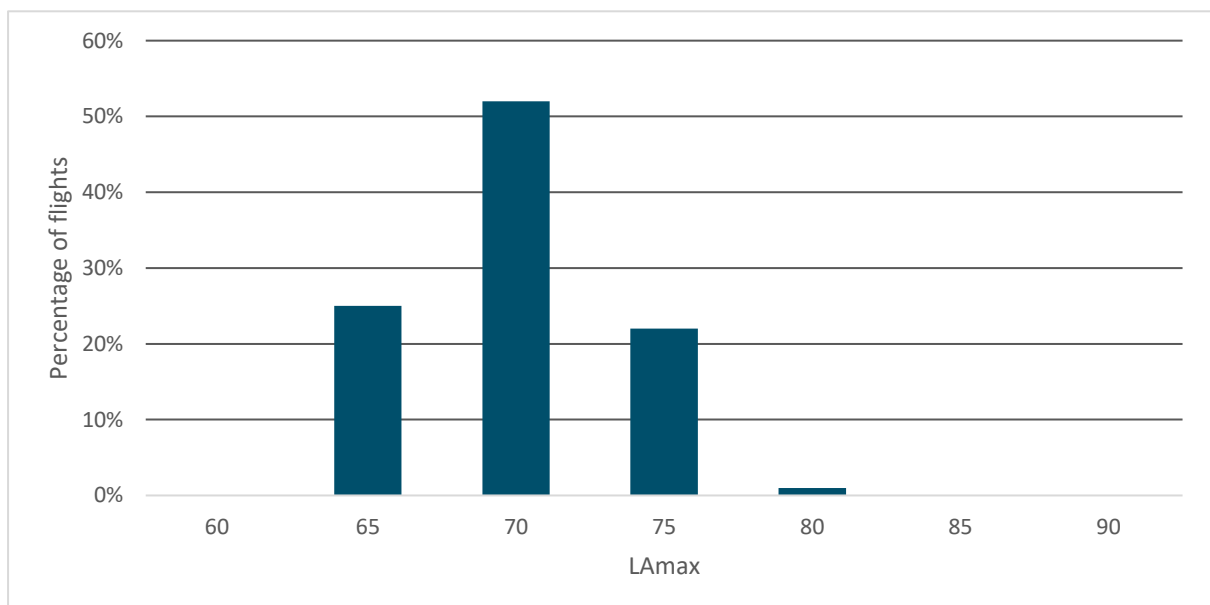


Figure 36: L<sub>Amax</sub> levels distribution for NMT 3, January – March 2023

Table 7 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 3.

Aircraft Type	Max dB	Total Count
P180	81.6	1
A310	76.7	1
A333	75.6	608
B772	75.3	6
PC12	75.3	6
B764	74.9	213
B739	74.3	4
A332	74.1	37
E170	74	2
B39M	73.9	8

Table 7: LMax by aircraft types correlated to NMT 3, January - March 2023

# NMT 4: Feltrim

Noise Monitoring Terminal 4 ('Feltrim') is located east of Dublin Airport and north of the flight path of runway 10R/28L, see Figure 37 below and monitors the local area. The resulting data for NMT 4 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

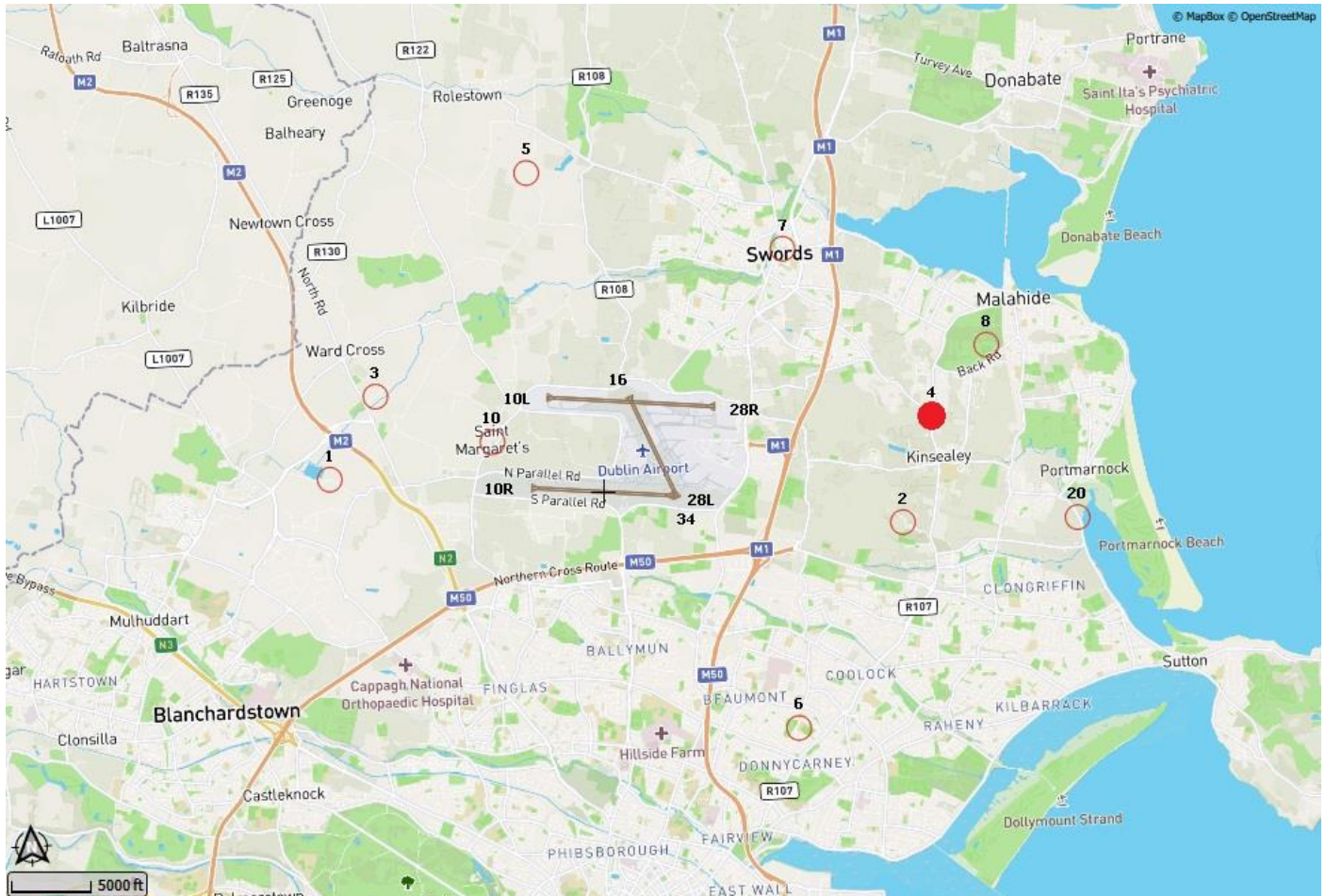


Figure 37: Noise Monitoring Terminal Feltrim Location

## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

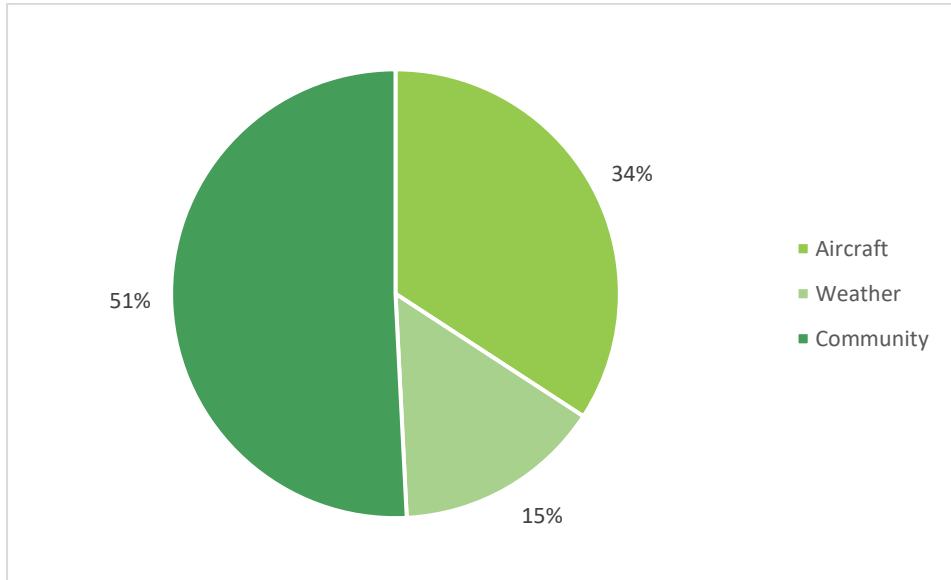


Figure 38: NMT 4 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 4: Feltrim is presented in Figure 39.

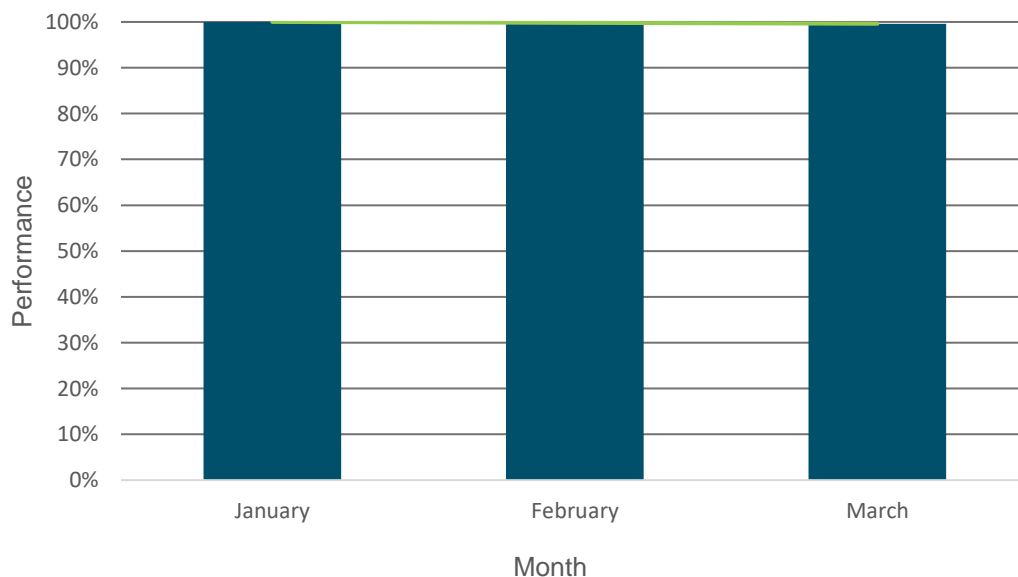


Figure 39: Operational status of NMT 4, January – March 2023



## Noise Levels

Figure 40 presents the average noise levels measured at NMT 4 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

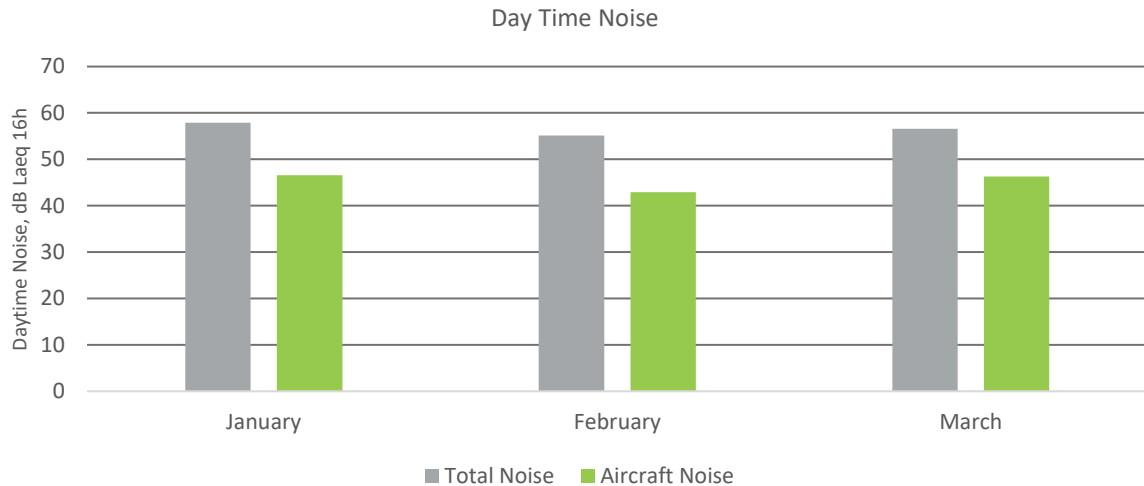


Figure 21: Averaged daytime noise levels for NMT 4, January – March 2022

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 41 presents these results monthly.

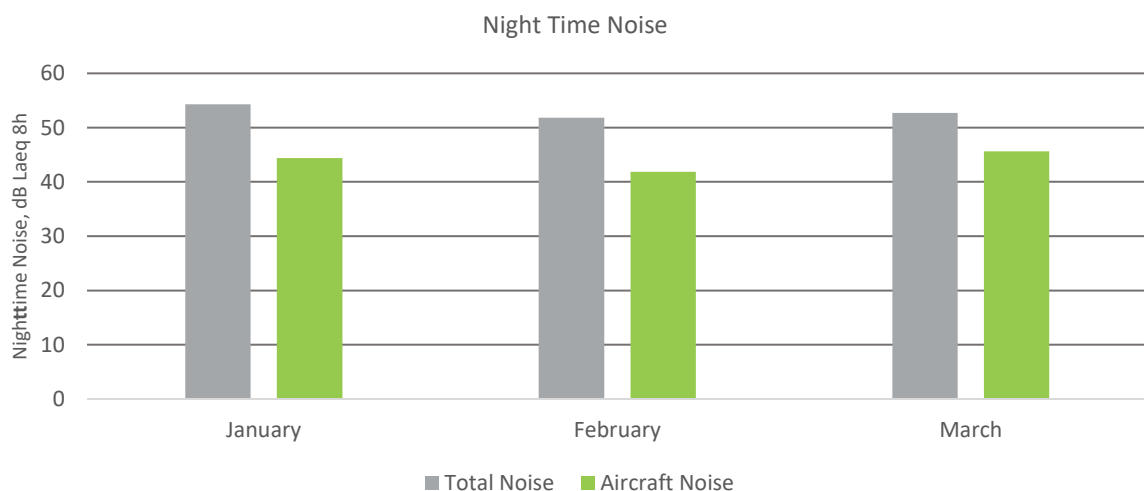


Figure 22: Averaged nighttime noise levels for NMT 4, January – March 2023



The hourly noise distribution at NMT 4 as shown in Figure 42.

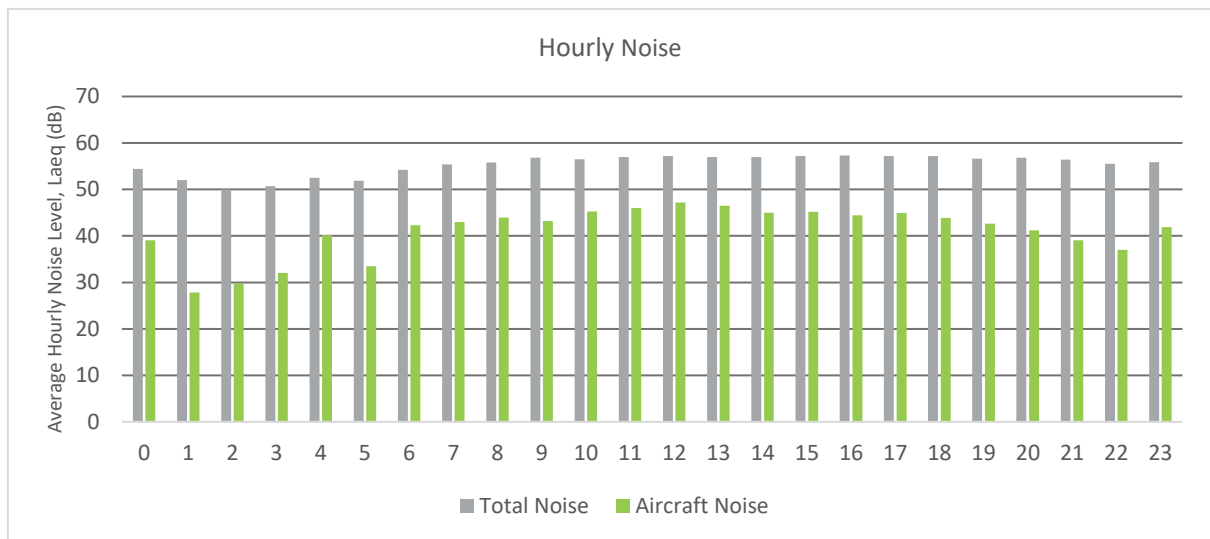


Figure 23: Averaged hourly noise levels for NMT 4, January – March 2023

Figure 43 shows the L<sub>Amax</sub> distribution for aircraft noise for the first quarter of 2023 for NMT 4.

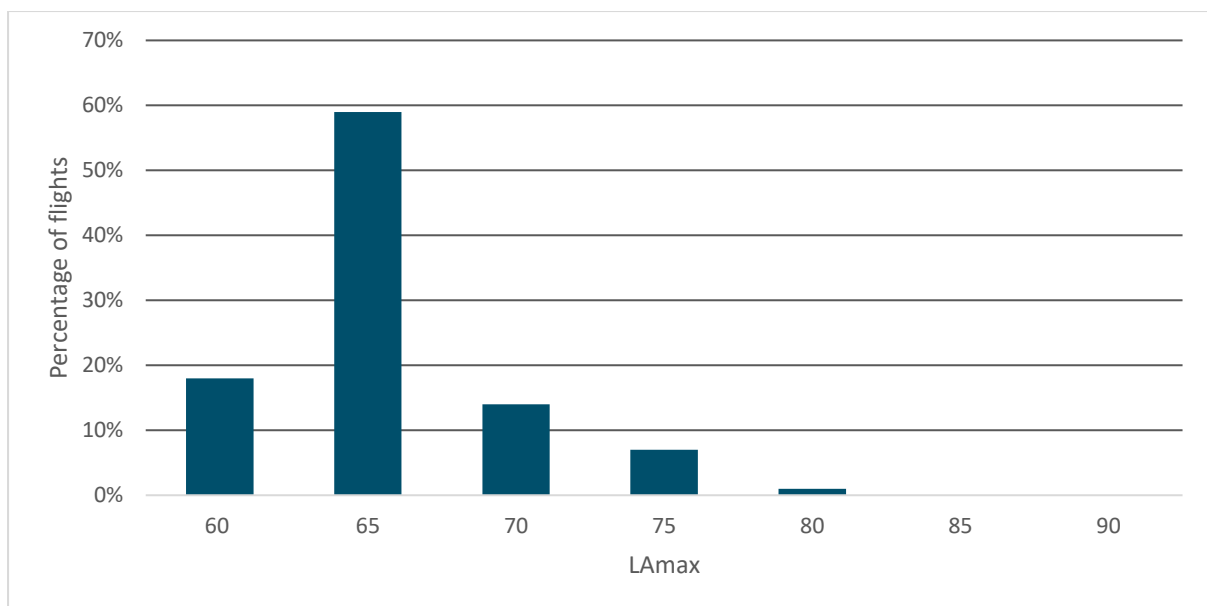


Figure 24: L<sub>Amax</sub> levels distribution for NMT 4, January – March 2023

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Table 8 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 4.

Aircraft Type	AVG Max dB	Total Count
LJ45	78.5	2
C525	77.8	1
BCS1	75.6	2
BE40	75.6	1
D328	74.7	1
7M8	73.2	5
LJ60	72.9	1
F100	72.2	1
E55P	71.8	1
C56X	71.4	3

Table 8: LAmax by aircraft types correlated to NMT 4, January - March 2023

# NMT 5: Balcultry

Noise Monitoring Terminal 5 ('Balcultry') is located northwest of Dublin Airport, see Figure 44 below, under the extended runway centreline of runway 34. Its purpose is to monitor runway 34 departures and runway 16 arrivals. The resulting data for NMT 5 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

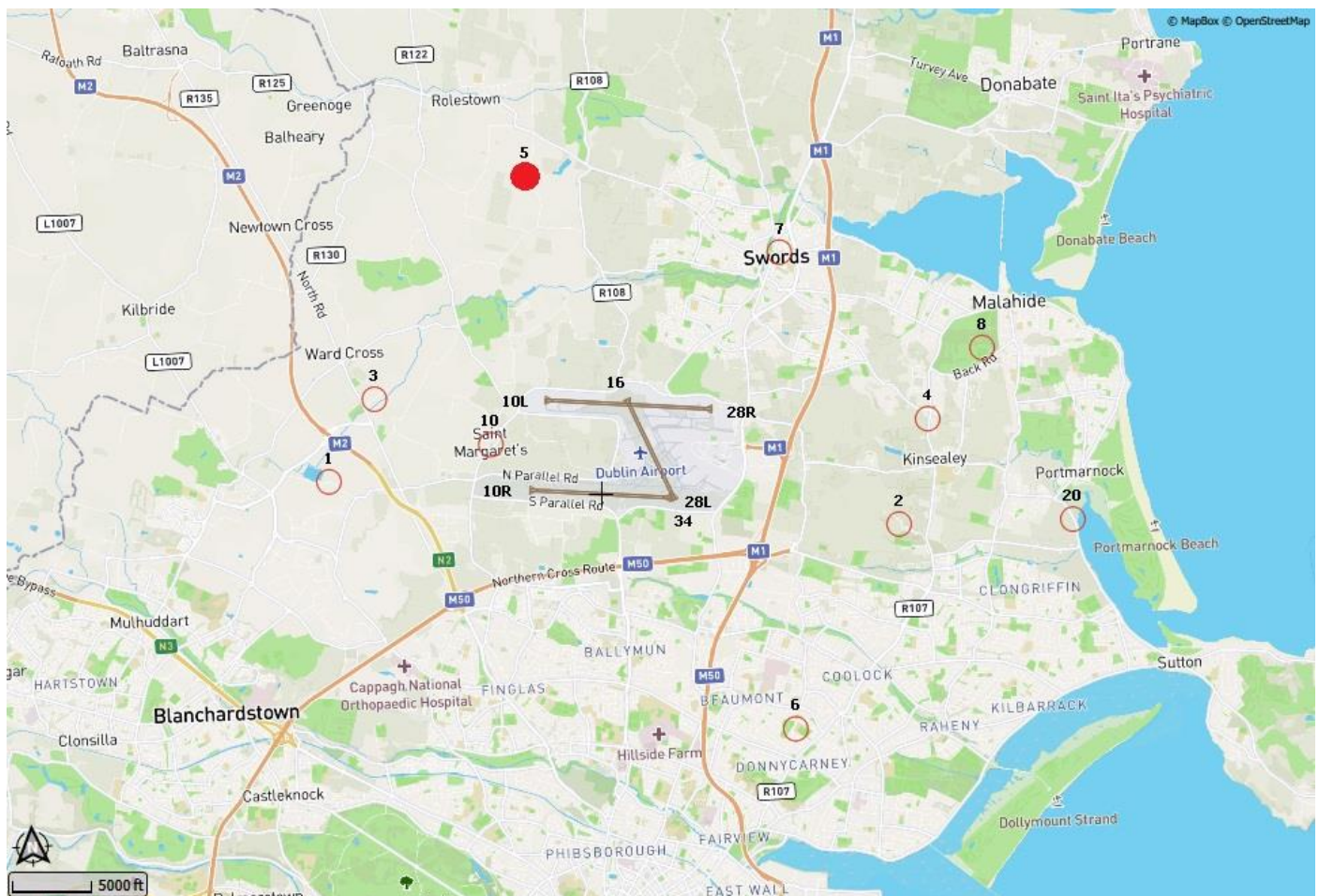


Figure 254: Noise Monitoring Terminal Balcultry Location

## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

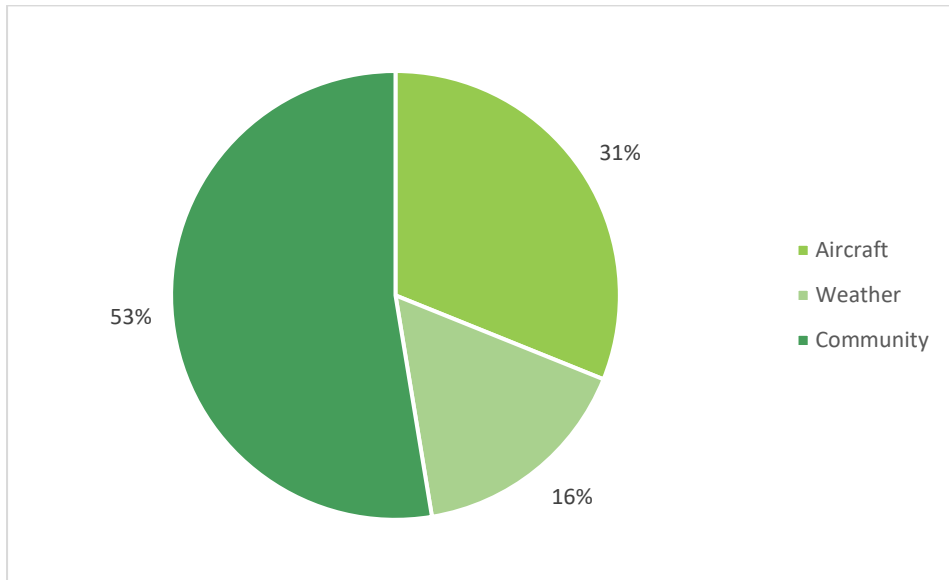


Figure 45: NMT 5 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 5: Balcultry is presented in Figure 46.

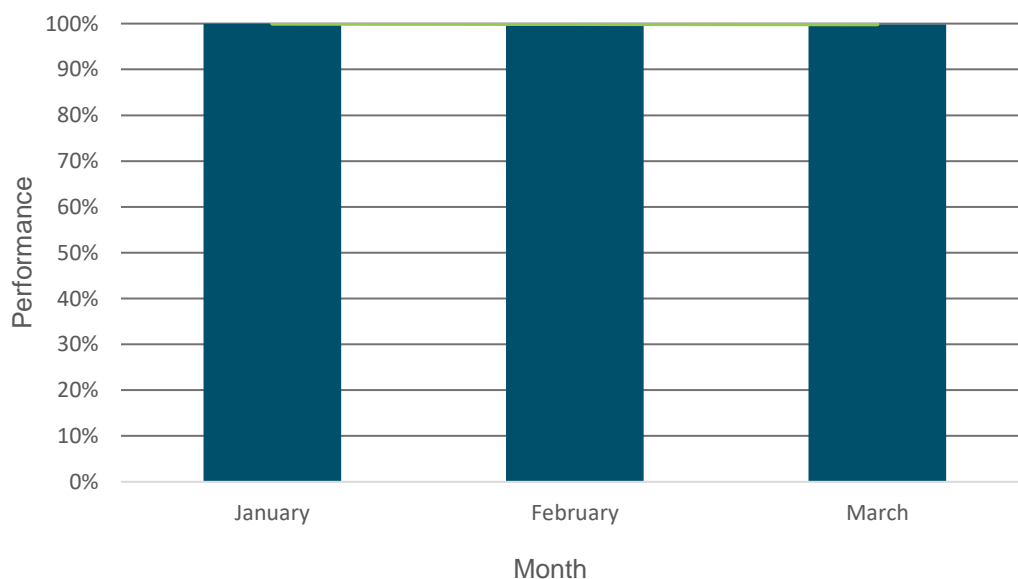


Figure 46: Operational status of NMT 5, January – March 2023

## Noise Levels

Figure 47 presents the average noise levels measured at NMT 5 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

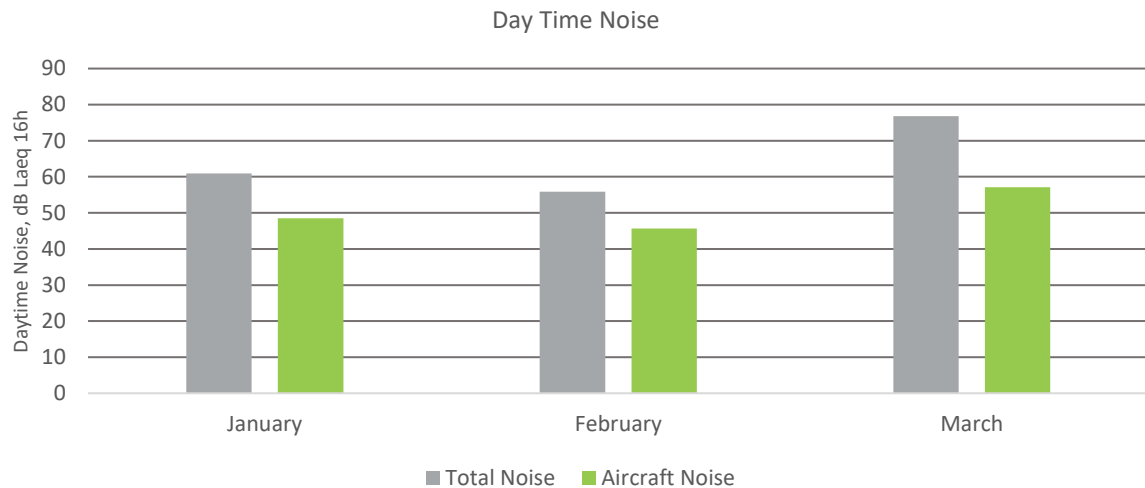


Figure 47: Averaged daytime noise levels for NMT 5, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 48 presents these results monthly.

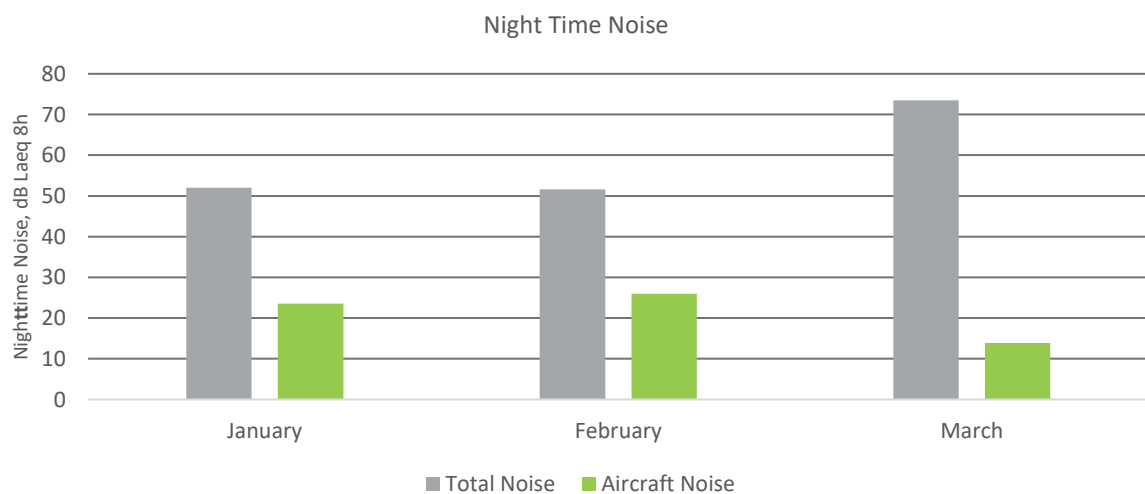


Figure 48: Averaged nighttime noise levels for NMT 5, January – March 2023

The hourly noise distribution at NMT 5 as shown in Figure 49.

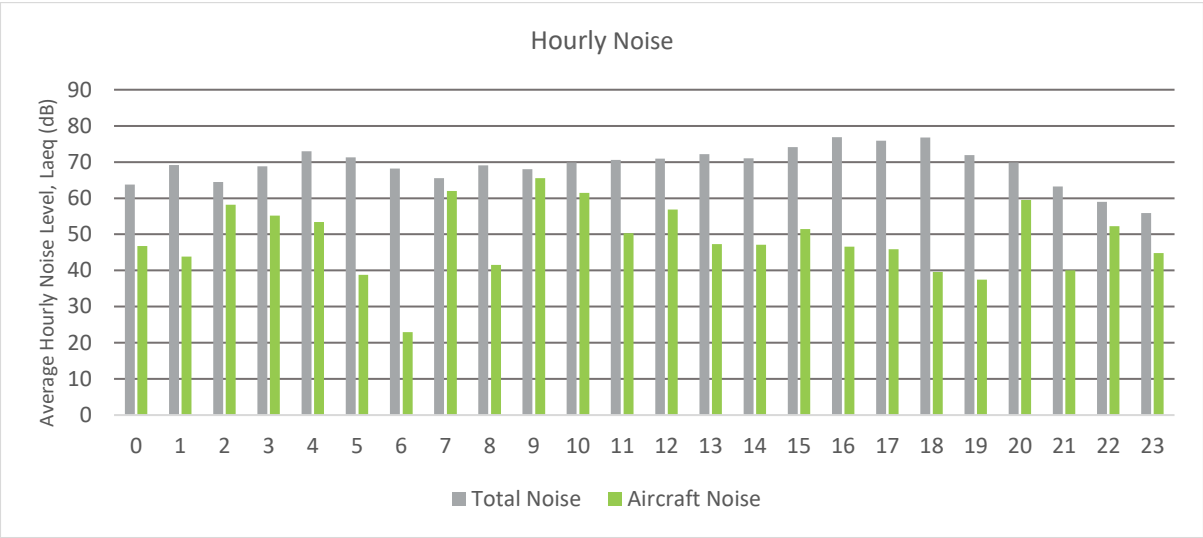


Figure 49: Averaged hourly noise levels for NMT 5, January – March 2023

Figure 50 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 5.

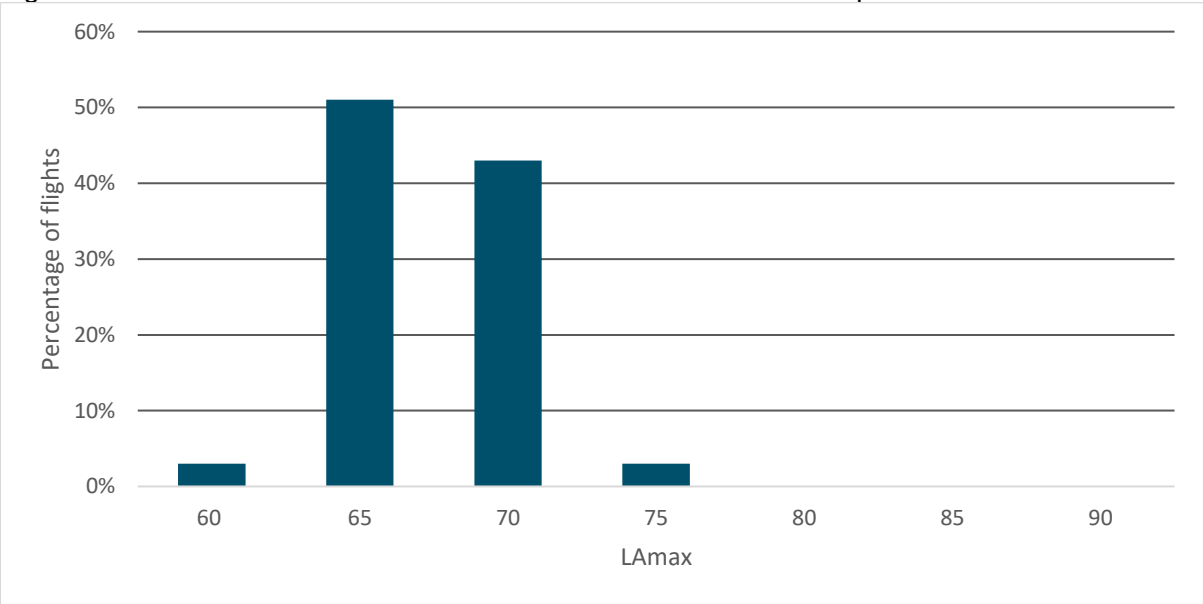


Figure 26: LAmax levels distribution for NMT 5, January – March 2023

Table 9 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 5.

Aircraft Type	Max dB	Total Count
PC12	81	2
7M8	79.8	1
FA7X	78.3	1
B772	72.2	1
A333	72	169
B763	72	5
E190	72	188
C560	71.5	3
AT73	71.3	34
C650	71.3	2

Table 9: LAmax by aircraft types correlated to NMT 5, January - March 2023

# NMT 6: Artane

Noise Monitoring Terminal 6 ('Artane') is located southeast of Dublin Airport on the roof a school building, see Figure 51 below, under the extended runway centreline of runway 16. Its purpose is to monitor runway 16 departures and runway 34 arrivals. The resulting data for NMT 6 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

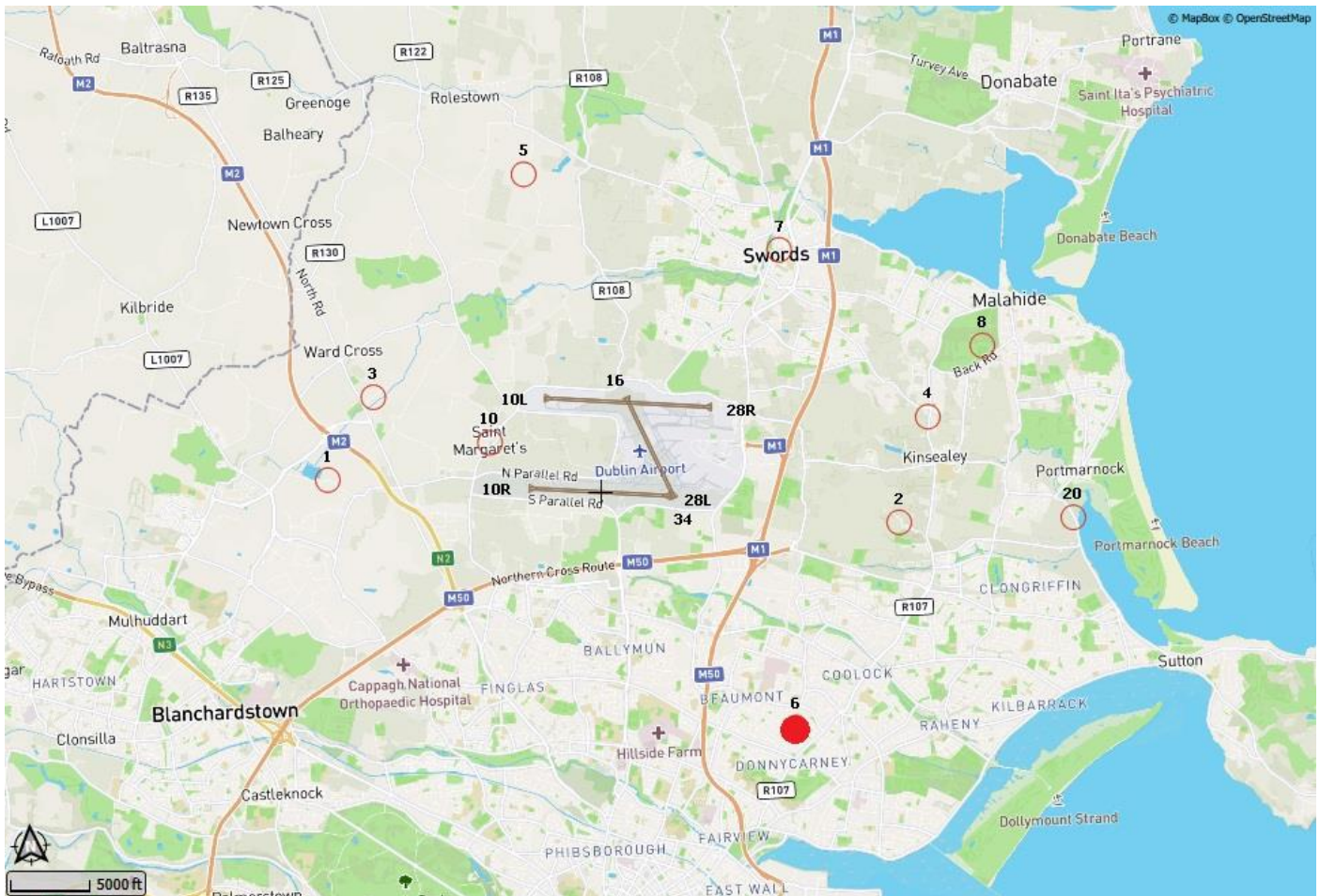


Figure 27: Noise Monitoring Terminal Artane Location



## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

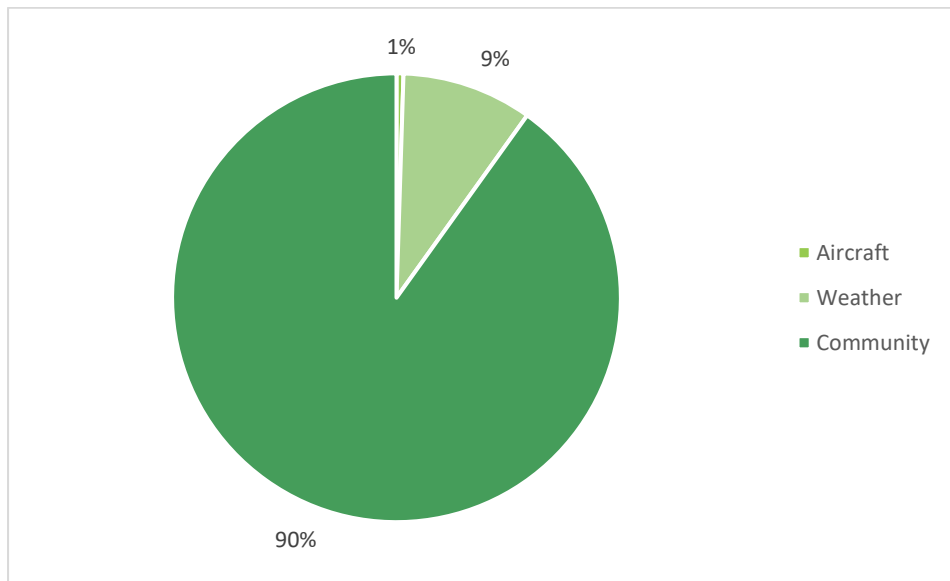


Figure 28: NMT 6 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 6: Artane is presented in Figure 53.

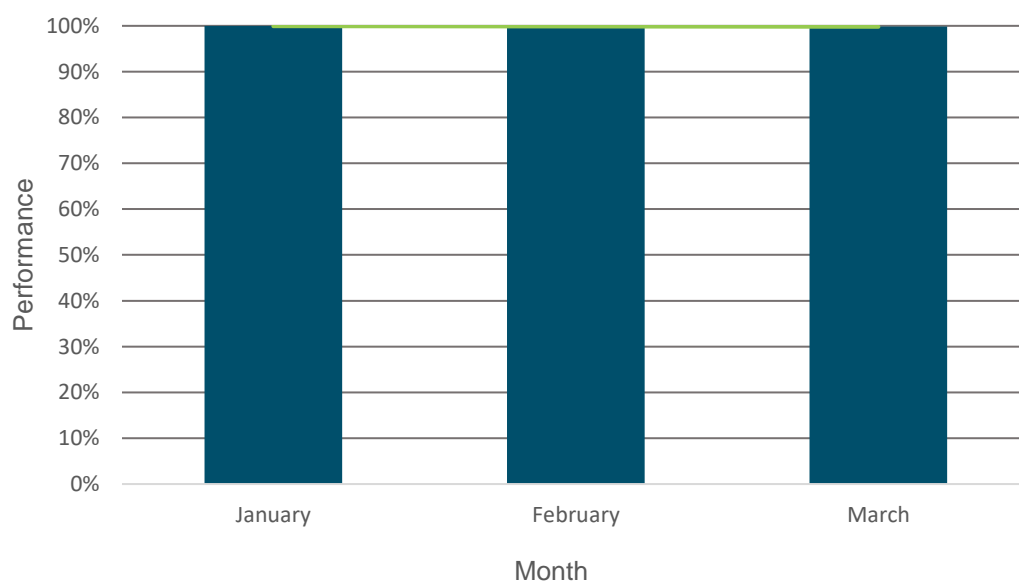


Figure 29: Operational status of NMT 6, January – March 2023

## Noise Levels

Figure 54 presents the average noise levels measured at NMT 6 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

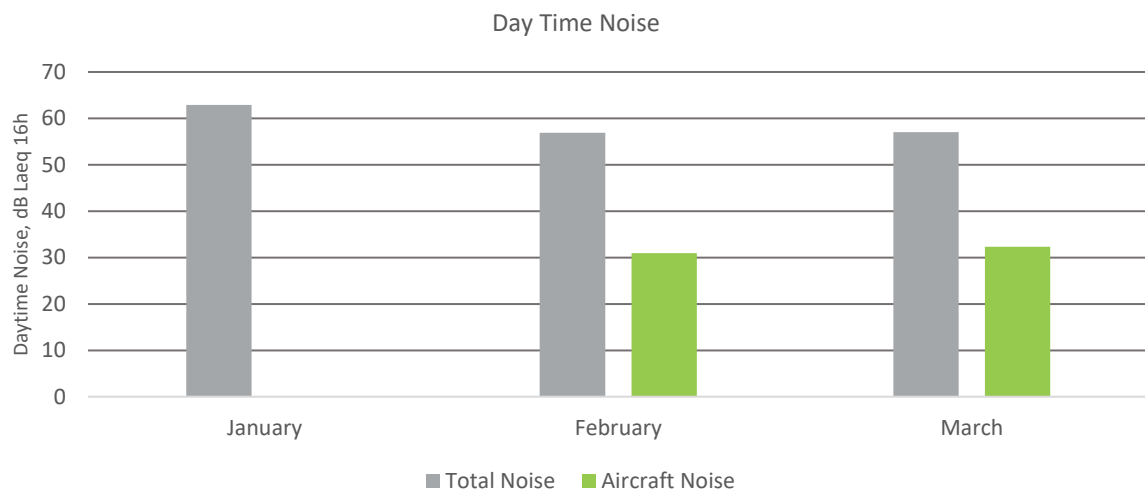


Figure 54: Averaged daytime noise levels for NMT 6, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 55 presents these results monthly.

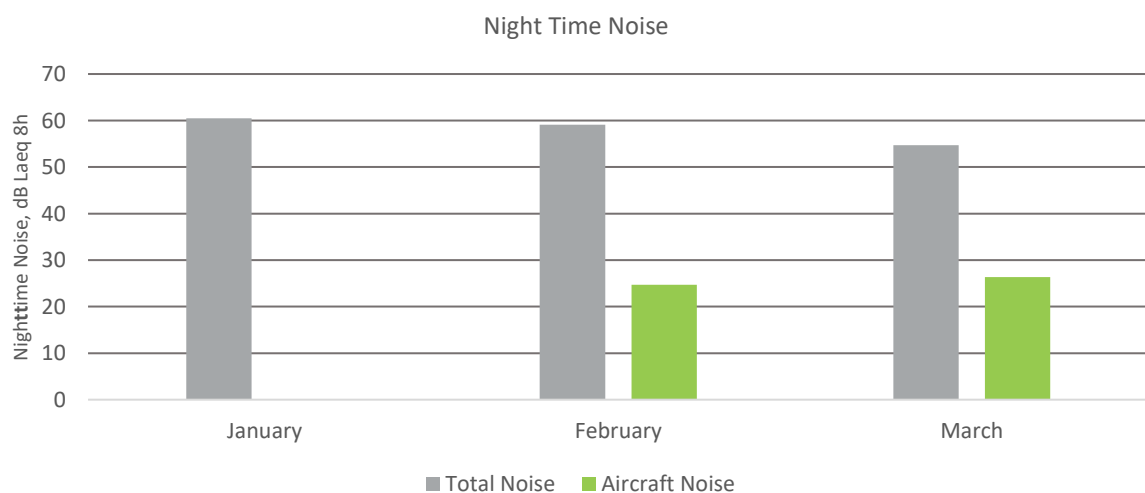


Figure 55: Averaged nighttime noise levels for NMT 6, January – March 2023

The hourly noise distribution at NMT 6 as shown in Figure 56.

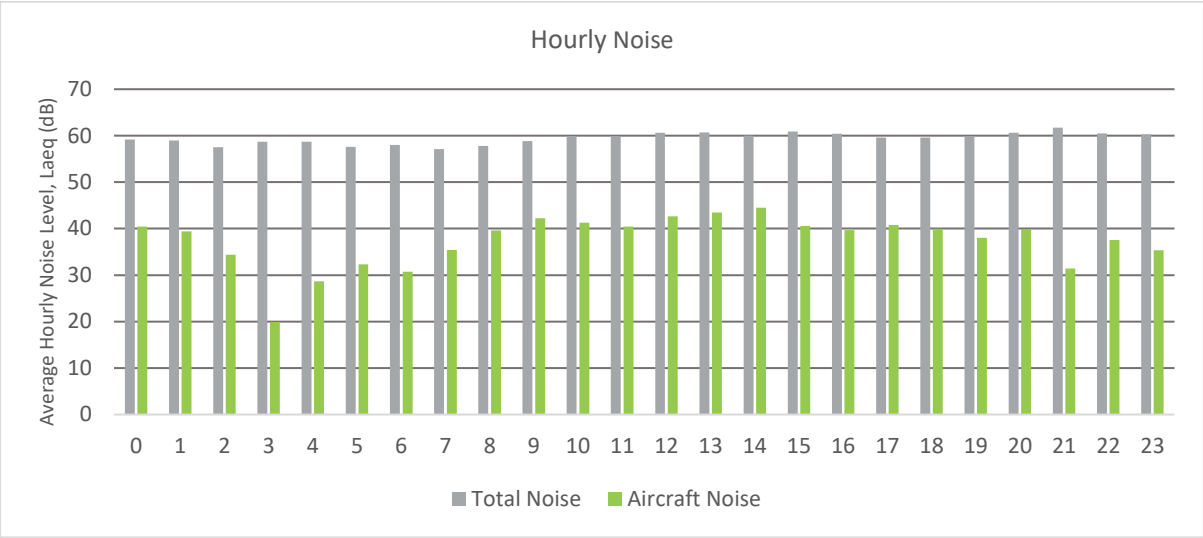


Figure 56: Averaged hourly noise levels for NMT 6, January – March 2023

Figure 57 shows the L<sub>Amax</sub> distribution for aircraft noise for the first quarter of 2023 for NMT 6

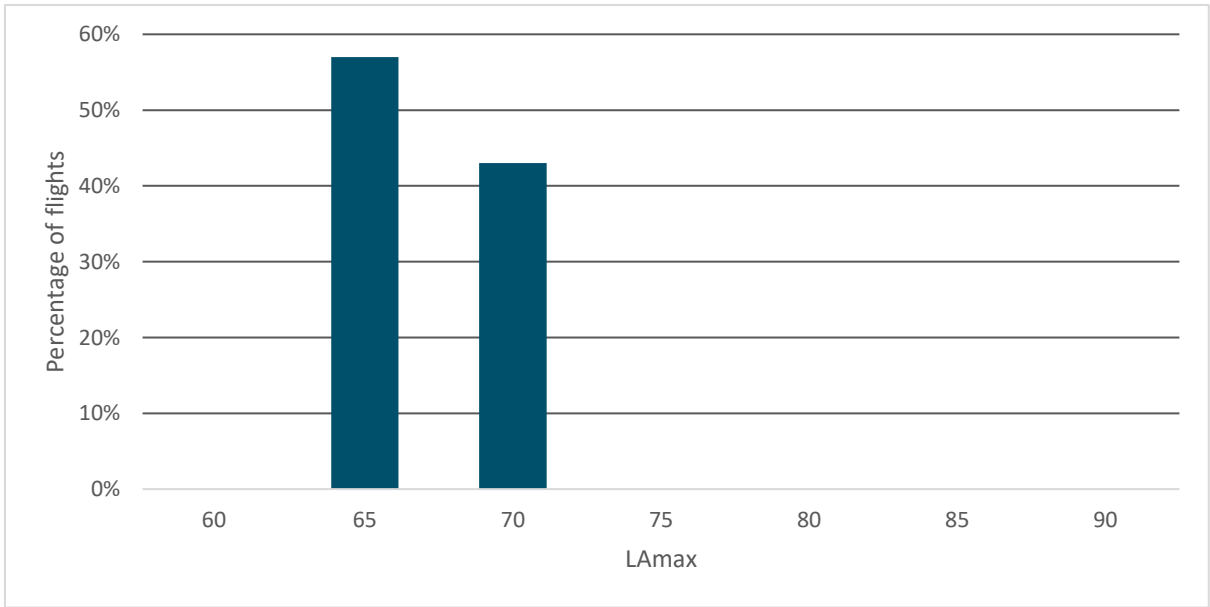


Figure 57 L<sub>Amax</sub> levels distribution for NMT 6, January – March 2023

Table 10 shows the top 4 loudest correlated aircraft types from the total count of correlated noise events to NMT 6.

Aircraft Type	Max dB	Total Count
AT72	72.3	1
AT73	69.6	67
AT76	69.4	6
TBM7	67.6	1

Table 10: LAmax by aircraft types correlated to NMT 6, January - March 2023

# NMT 7: County Hall

Noise Monitoring Terminal 7 ('County Hall') is located north of Dublin. Its purpose is to monitor runway 28R departures. The resulting data for NMT 7 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

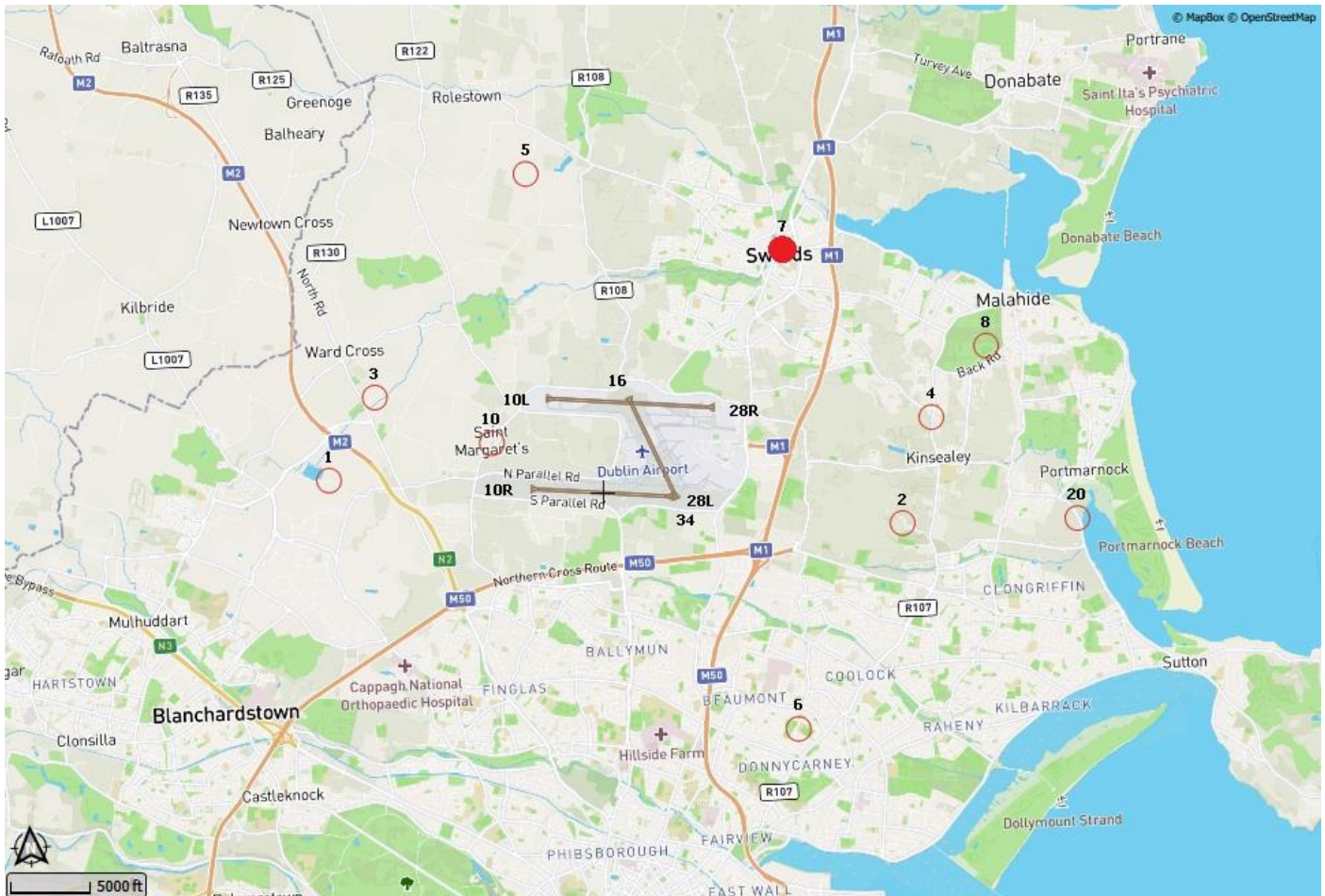


Figure 58: Noise Monitoring Terminal Coast Road Location

Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

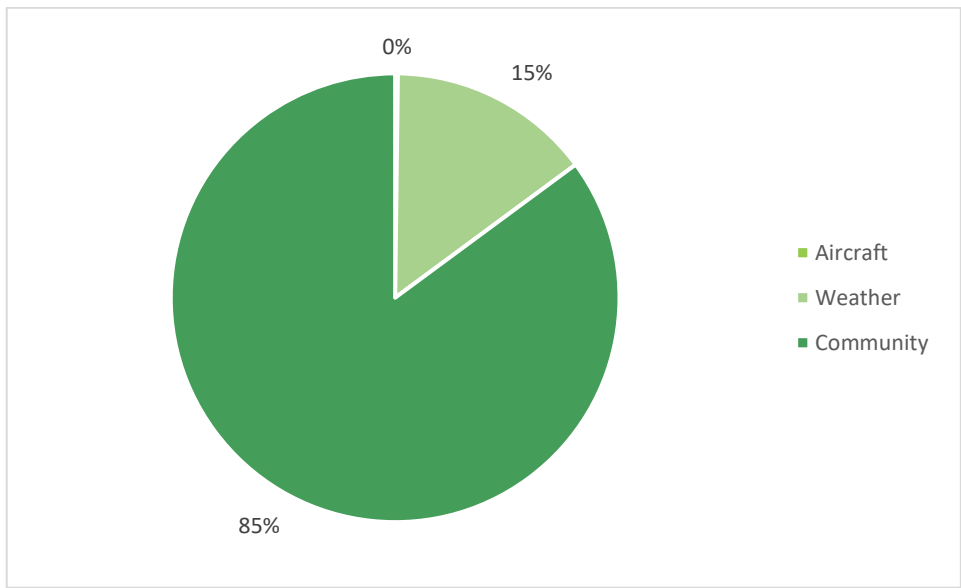


Figure 59: NMT 7 Noise Event Types

NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 7: Coast Road is presented in Figure 60.

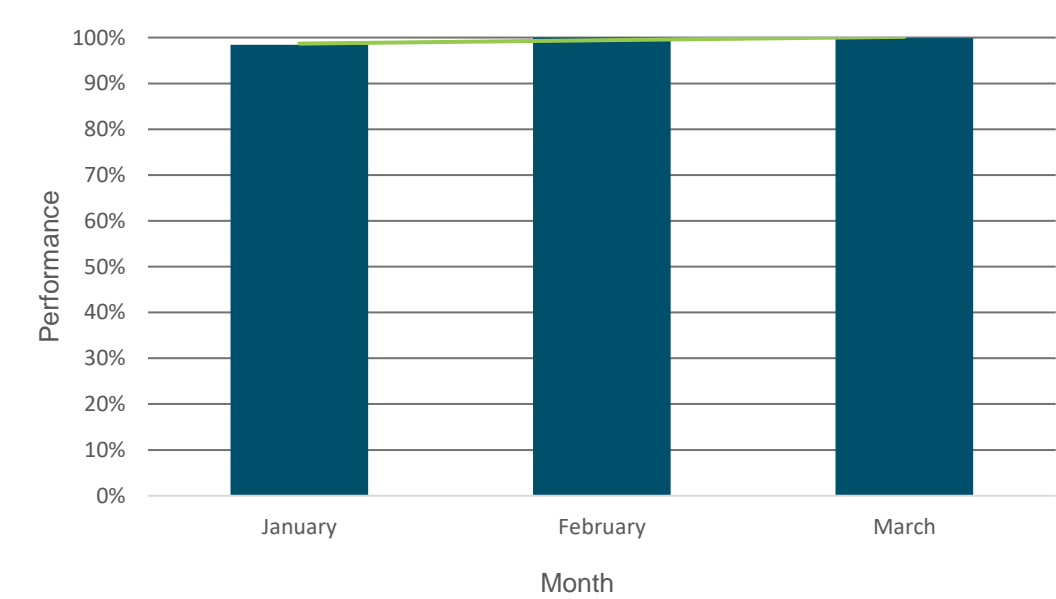


Figure 60: Operational status of NMT 7, January – March 2023

## Noise Levels

Figure 61 presents the average noise levels measured at NMT 7 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

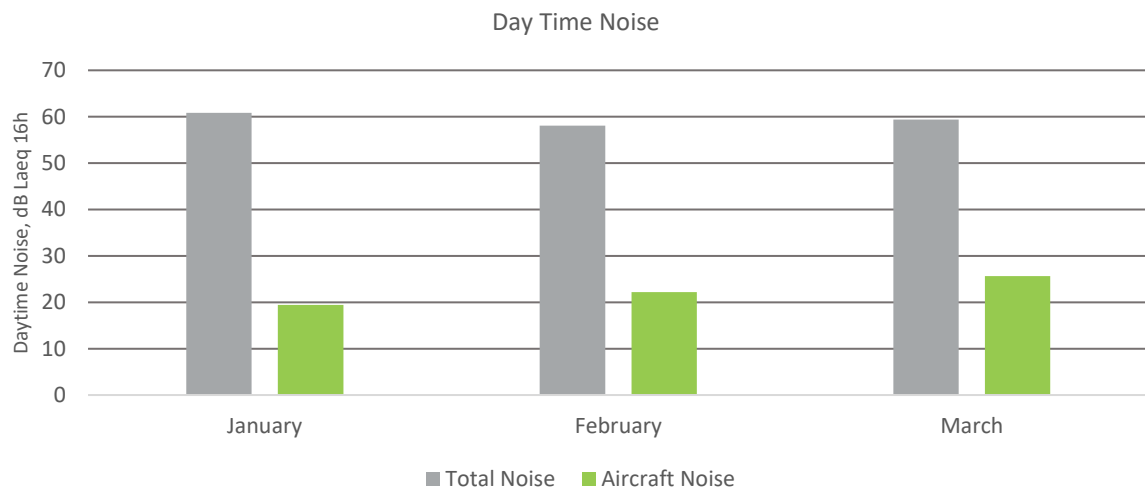


Figure 30: Averaged daytime noise levels for NMT 7, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 62 presents these results monthly.

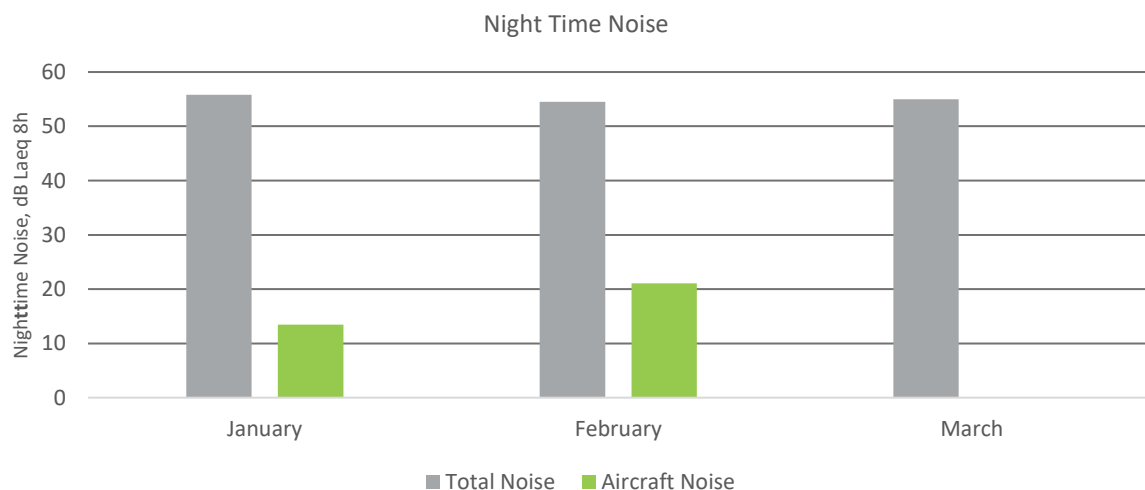


Figure 62: Averaged nighttime noise levels for NMT 7, January – March 2023

The hourly noise distribution at NMT 7 as shown in Figure 63.

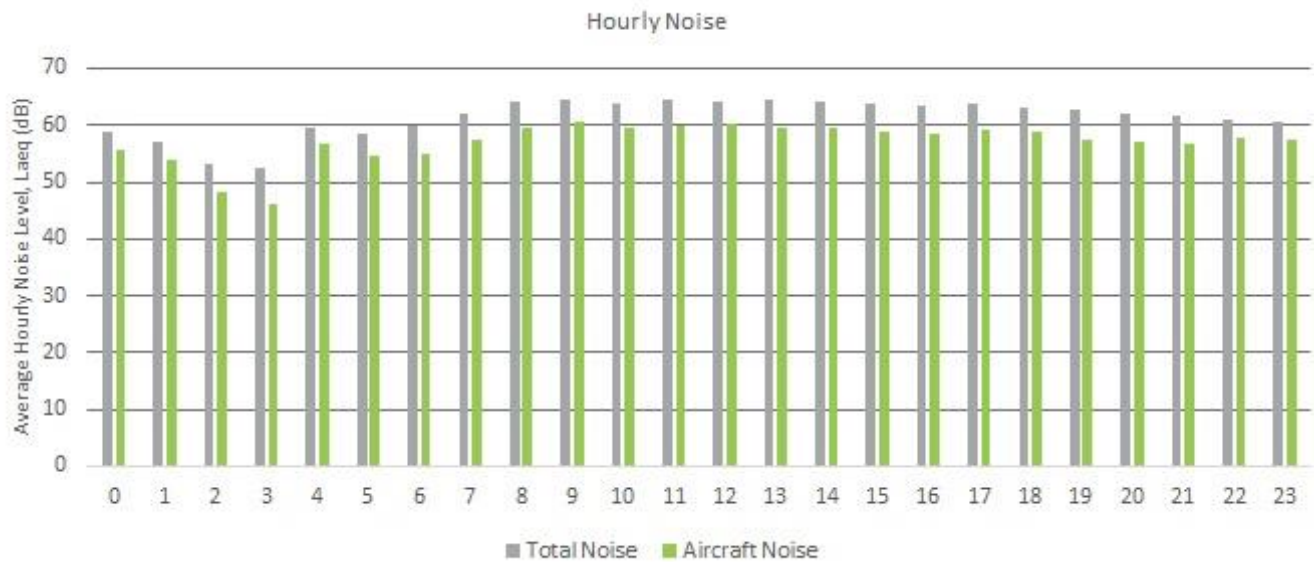


Figure 31: Averaged hourly noise levels for NMT 7, January – March 2023

Figure 64 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 7.

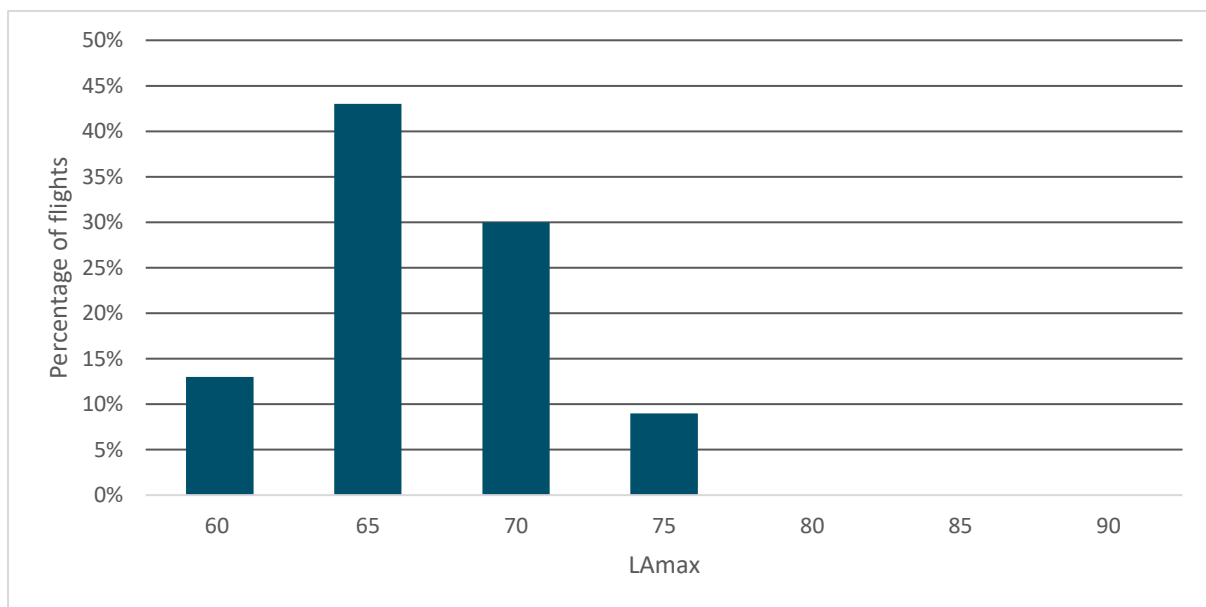


Figure 64: LAmax levels distribution for NMT 7, January – March 2023



Table 11 shows the top 9 loudest correlated aircraft types from the total count of correlated noise events to NMT 7.

Aircraft Type	Max dB	Total Count
A333	76.5	2
F406	74.5	2
A320	69.7	1
AT73	69.5	10
SF34	69.1	1
B38M	65.9	1
AT72	65.5	4
B77W	65	1
A319	63.2	1

Table 11: LAmax by aircraft types correlated to NMT 7, January – March 2023

# NMT 8: Malahide Hall

Noise Monitoring Terminal 8 (Malahide Demesne) is located northeast of Dublin. Its purpose is to monitor runway 28R departures. The resulting data for NMT 8 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

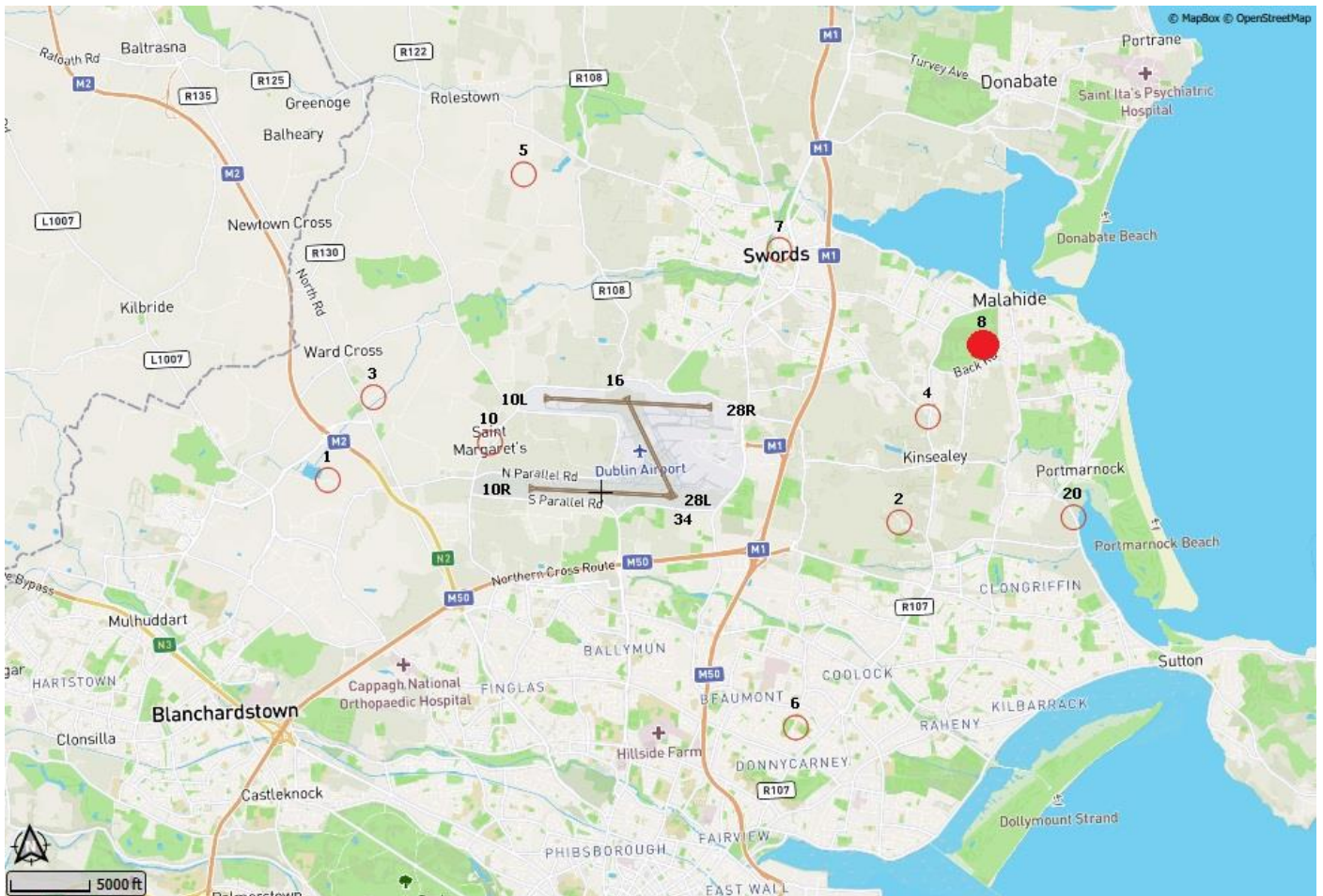


Figure 65: Noise Monitoring Terminal Coast Road Location

## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

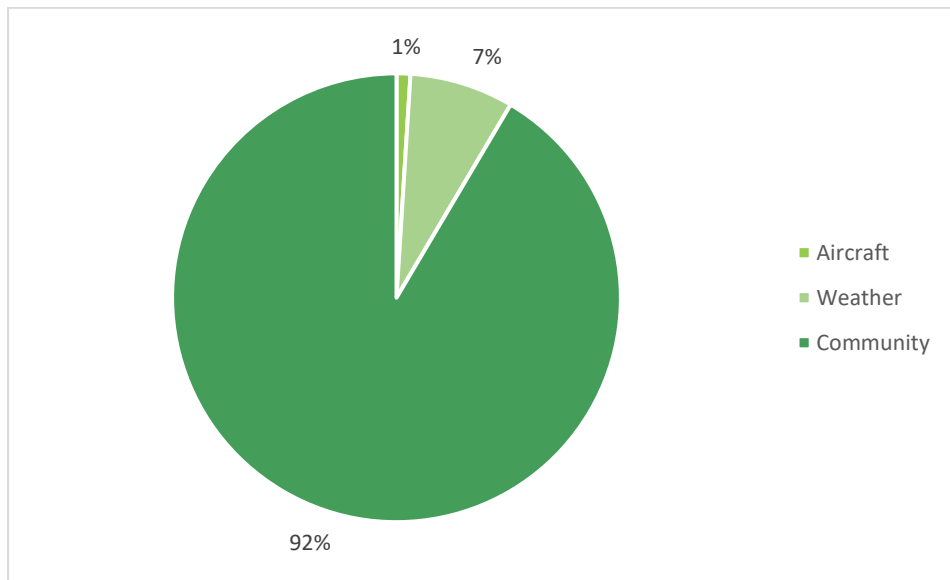


Figure 66: NMT 8 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 8: Coast Road is presented in Figure 66.

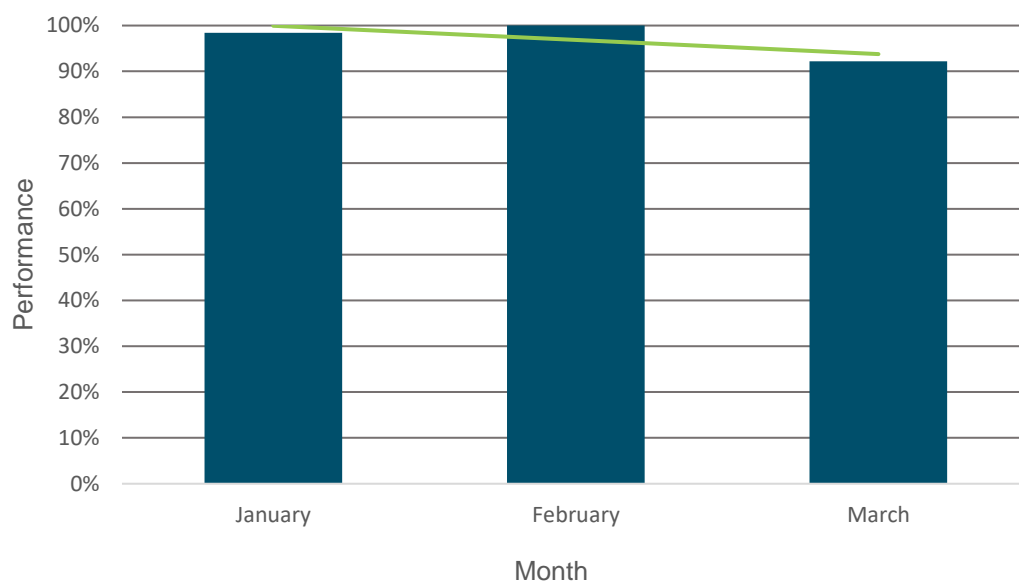


Figure 66: Operational status of NMT 8, January – March 2023

## Noise Levels

Figure 66 presents the average noise levels measured at NMT 8 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

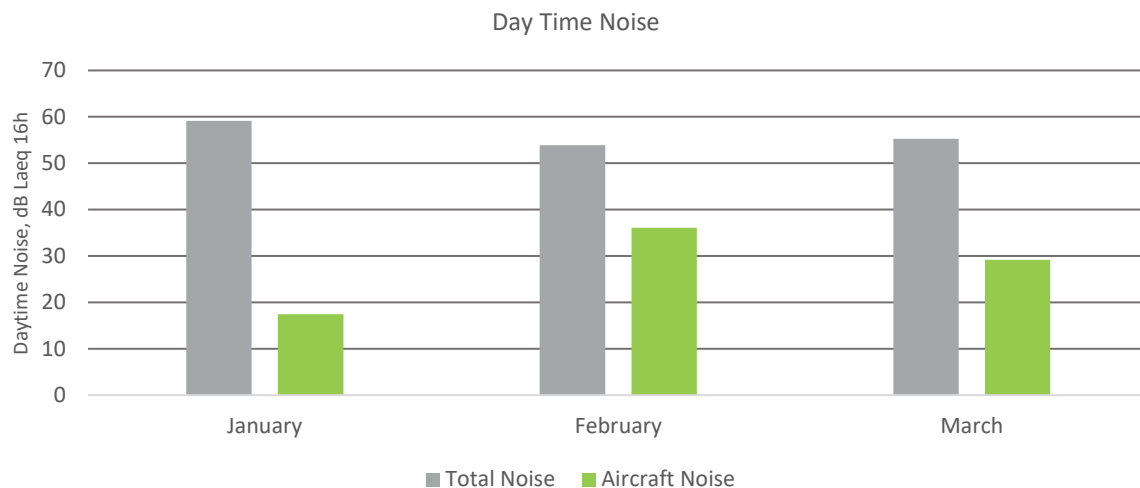


Figure 32: Averaged daytime noise levels for NMT 8, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 67 presents these results monthly.

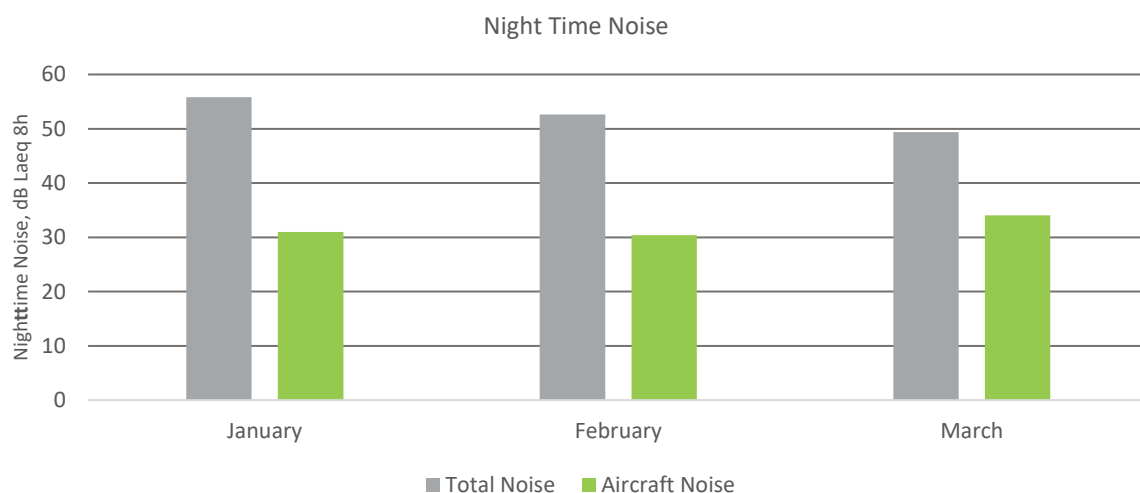


Figure 67: Averaged nighttime noise levels for NMT 8, January – March 2023

The hourly noise distribution at NMT 8 as shown in Figure 68.

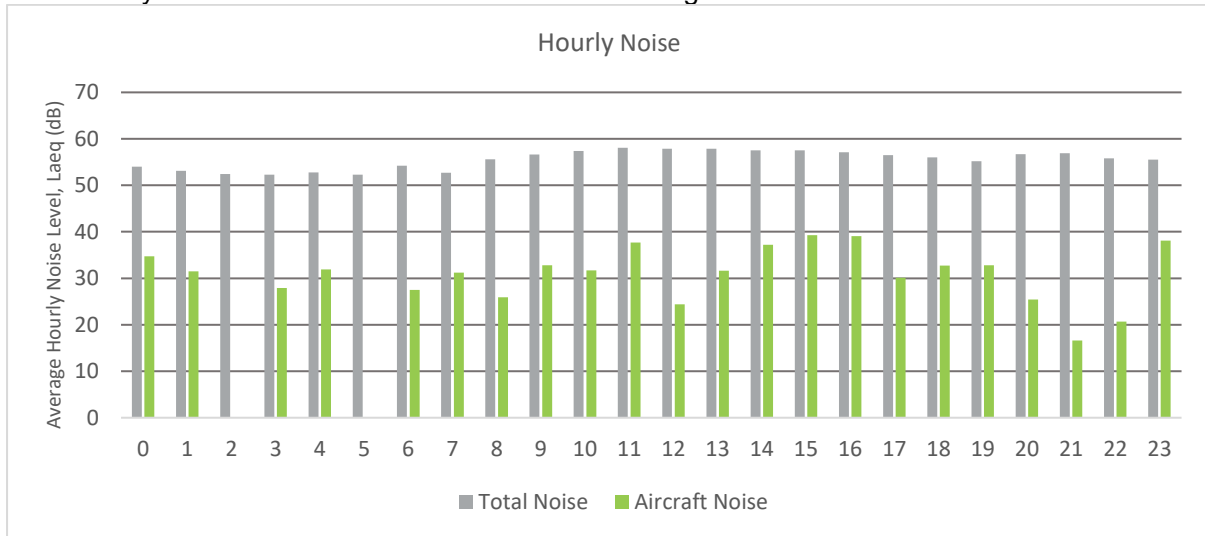


Figure 33: Averaged hourly noise levels for NMT 8, January – March 2023

Figure 69 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 8.

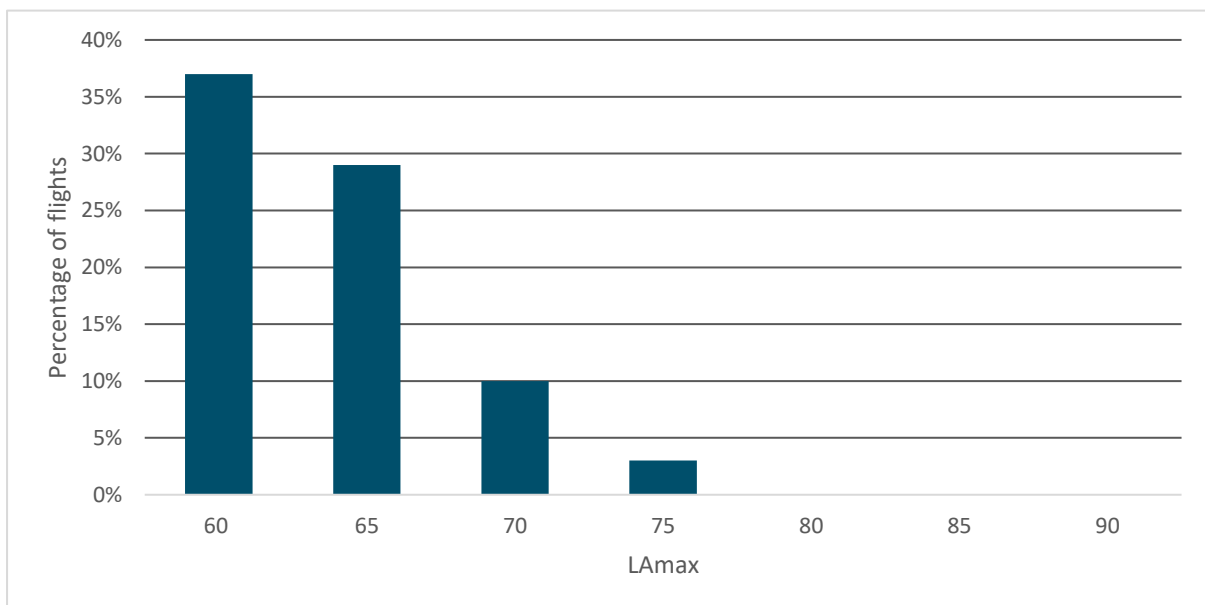


Figure 69: LAmax levels distribution for NMT 8, January – March 2023

Table 12 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 8.

Aircraft Type	Max dB	Total Count
GLEK	70.1	1
A320	68.4	21
A21N	67.4	1
A333	67.2	8
B738	65.2	44
AT73	64.9	59
B734	64.2	2
A20N	63.8	1
B77L	63.8	1
PC12	63.6	1

Table 12: LAmax by aircraft types correlated to NMT 8, January – March 2023

# NMT 10: St: Margaret's National School

Noise Monitoring Terminal 10 (St. Margaret's National School) is located west of Dublin and positioned between NMT 1 and 3. Its purpose is to monitor runway 28R departures and 10L arrivals. The resulting data for NMT 10 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

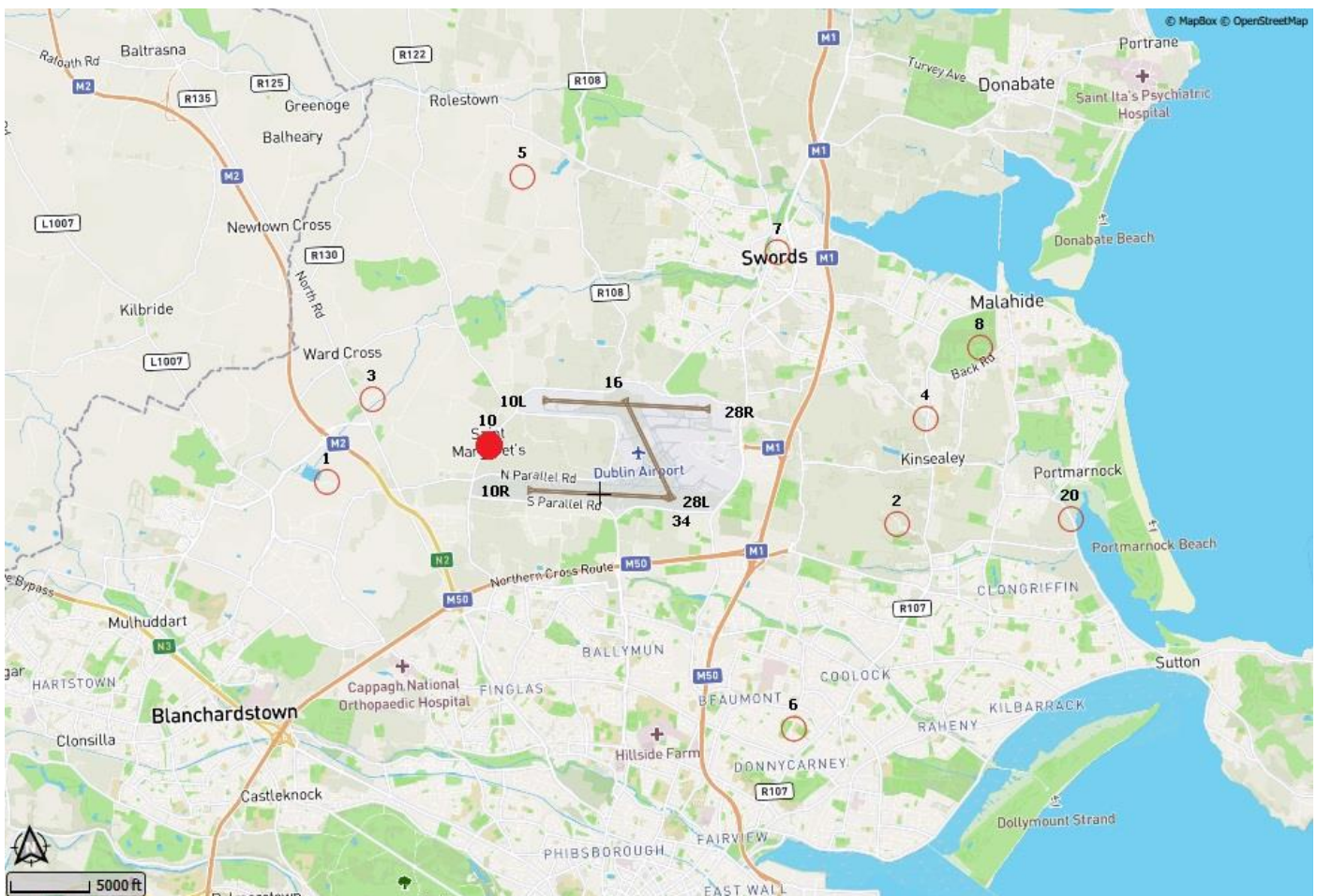


Figure 70: Noise Monitoring Terminal Coast Road Location



## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

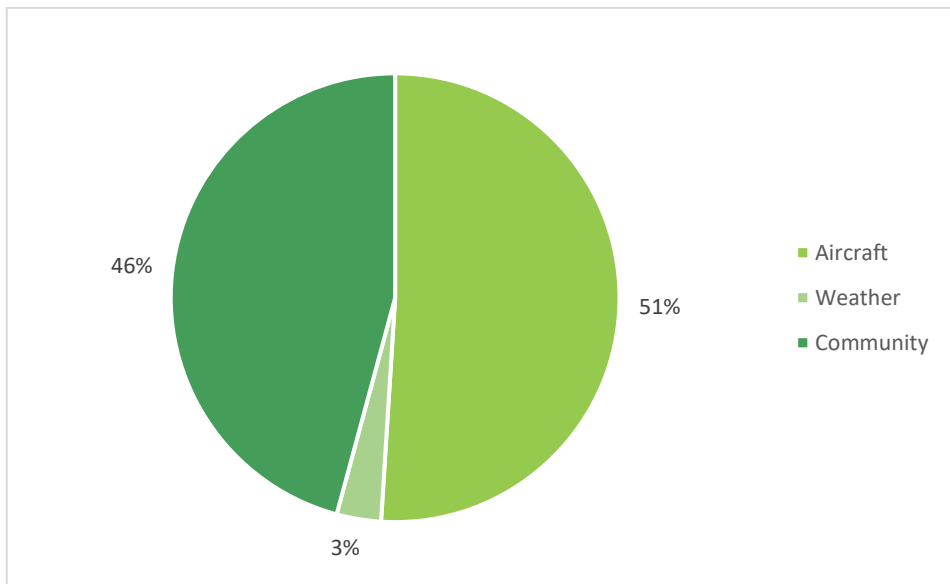


Figure 71: NMT 8 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 10: Coast Road is presented in Figure 72.

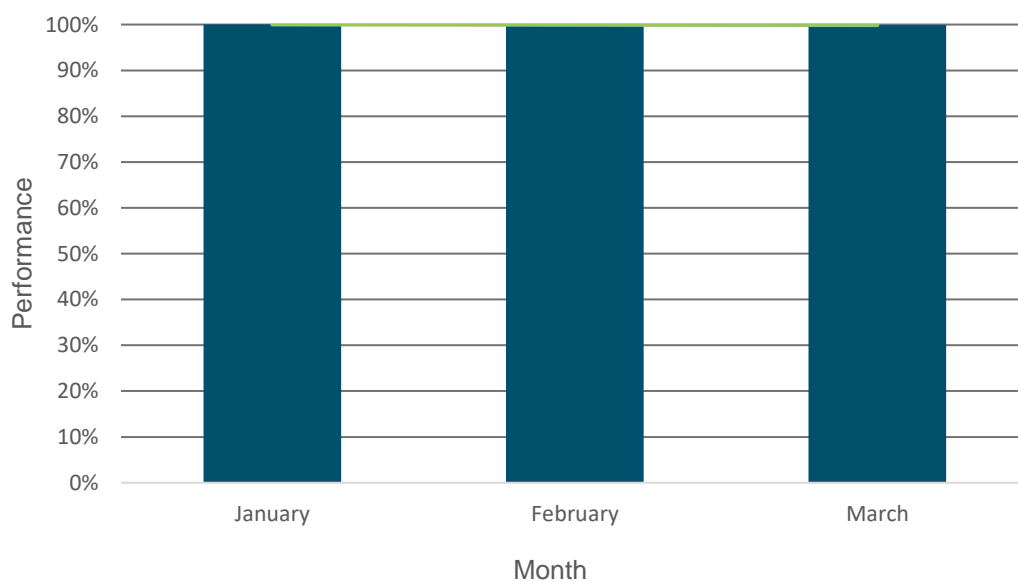


Figure 72: Operational status of NMT 10, January – March 2023



## Noise Levels

Figure 73 presents the average noise levels measured at NMT 10 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

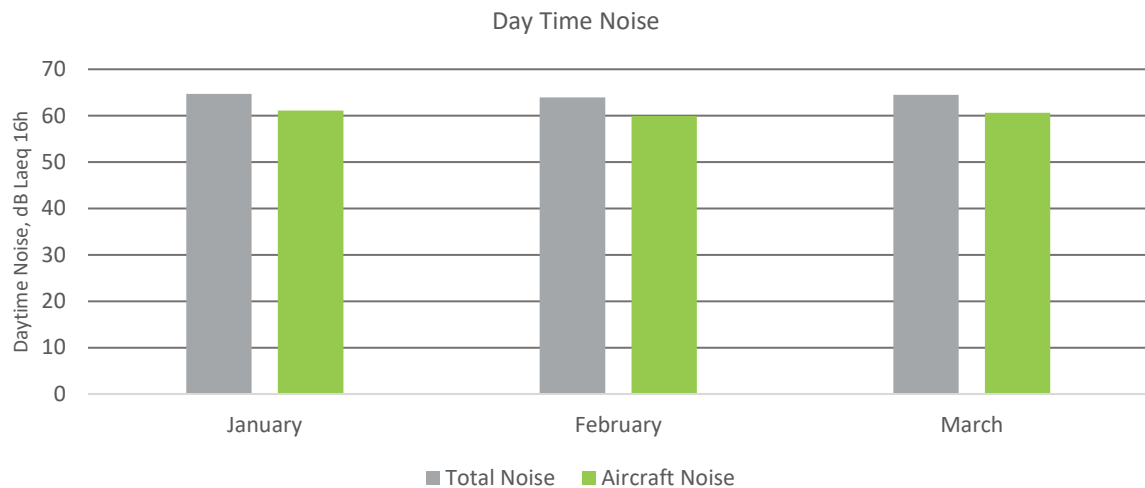


Figure 34: Averaged daytime noise levels for NMT 10, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 74 presents these results monthly.

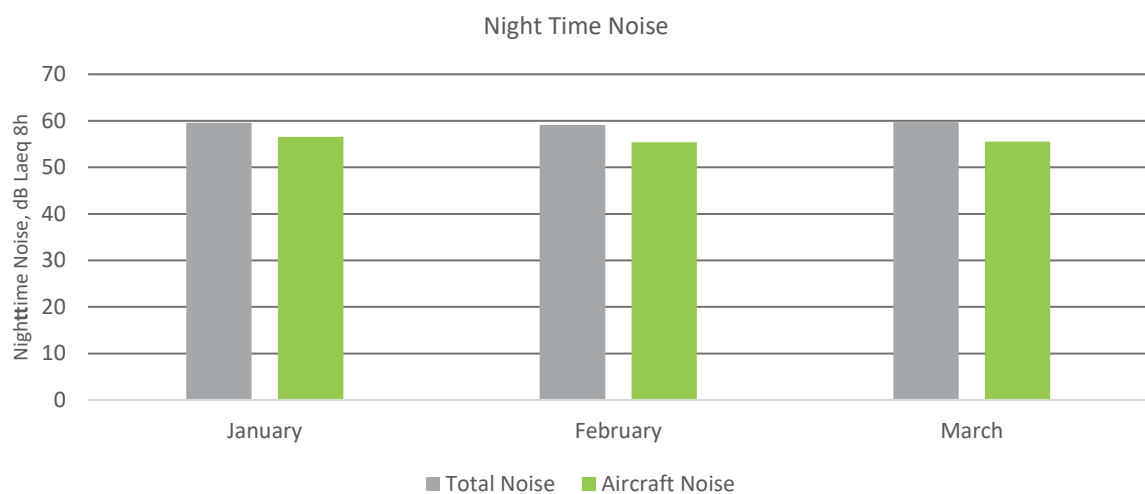


Figure 74: Averaged nighttime noise levels for NMT 10, January – March 2023

The hourly noise distribution at NMT 8 as shown in Figure 75.

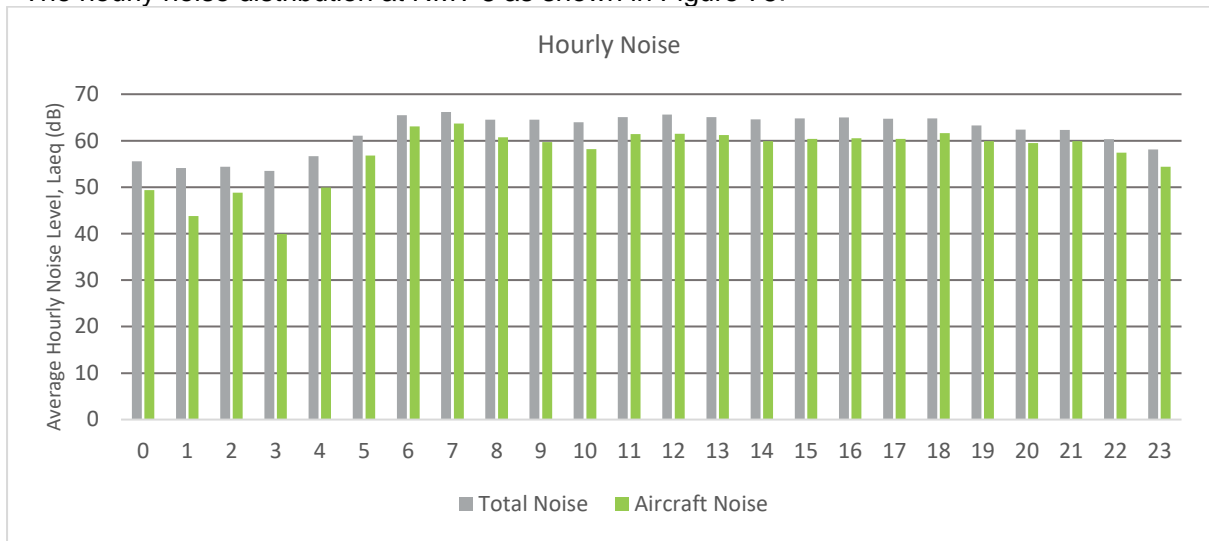


Figure 75: Averaged hourly noise levels for NMT 10, January – March 2023

Figure 76 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 10.

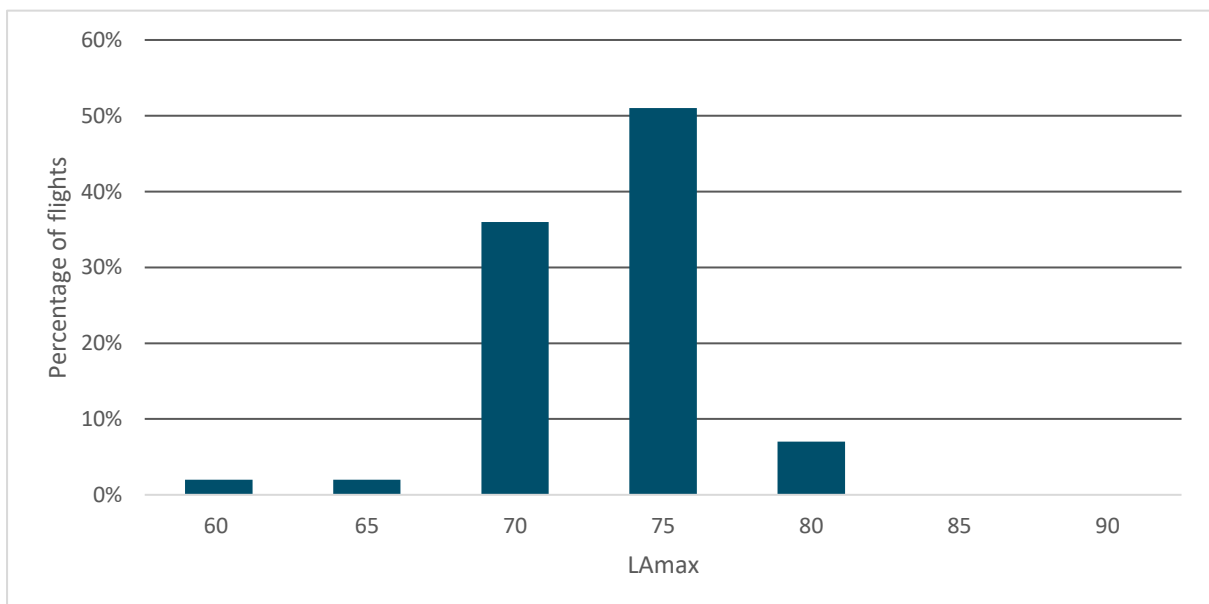


Figure 76: LAmax levels distribution for NMT 10, January – March 2023

Table 13 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 10.

Aircraft Type	Max dB	Total Count
B764	80.9	216
A333	80.4	627
B772	78.8	6
A332	78.6	39
A306	78.5	10
B77W	78.3	187
E90	76.9	1
73H	76.6	7
B738	76.5	7053
A35K	76.2	2

Table 13: L<sub>A</sub>max by aircraft types correlated to NMT 10, January – March 2023

# NMT 20: OP (Oscar Pappa)

Noise Monitoring Terminal 20 ('Oscar Pappa') is located east of Dublin Airport, see Figure 77 below, under the extended runway centreline of runway 10R. Its purpose is to monitor runway 10R departures and runway 28L arrivals. The resulting data for NMT 20 measurements in the period from January 1<sup>st</sup> up to and including March 31<sup>st</sup>, 2023 are presented in this section.

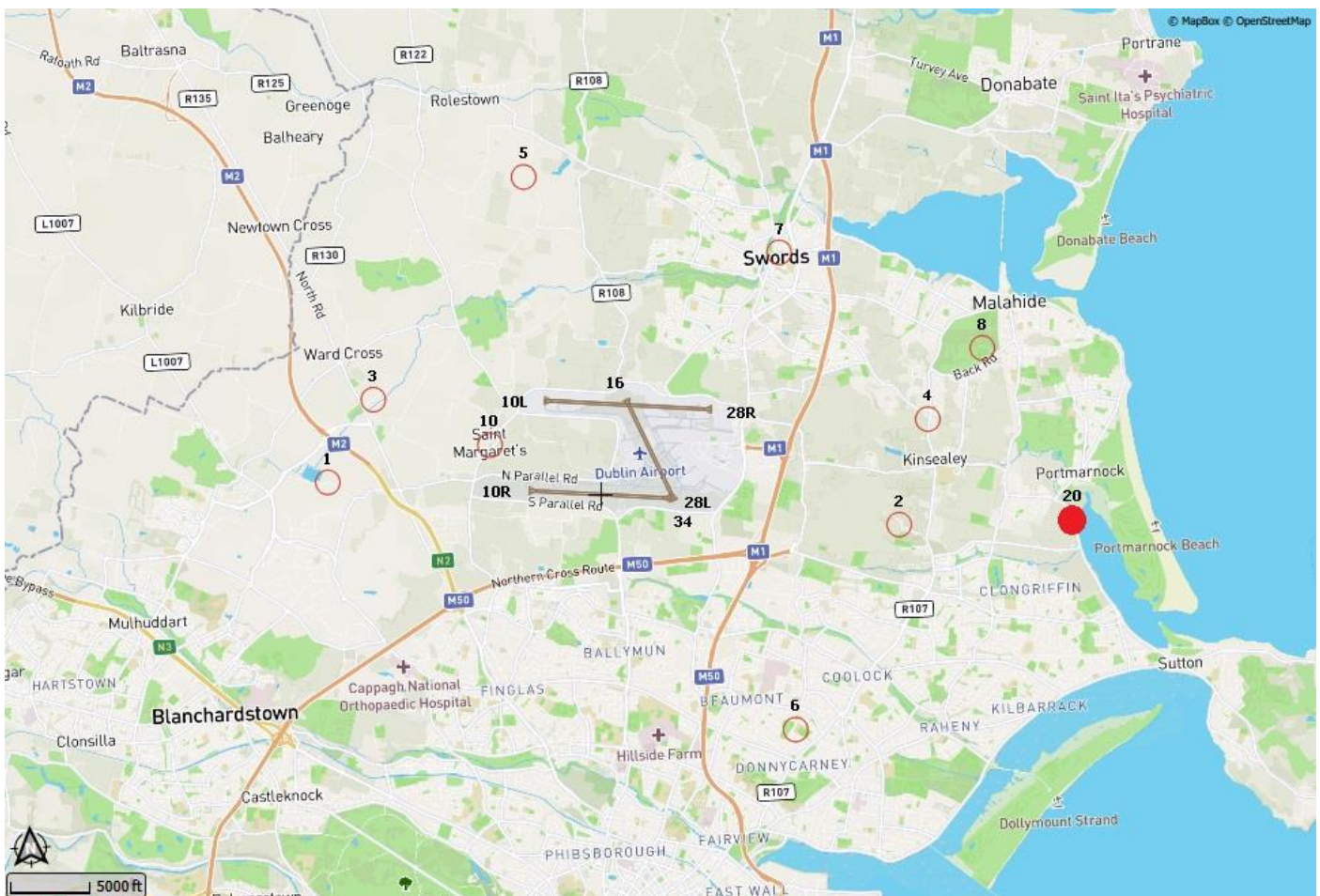


Figure 77: Noise Monitoring Terminal Coast Road Location

## Noise Events

The figure below shows the breakdown of noise events attributed to aircraft, weather, and the community.

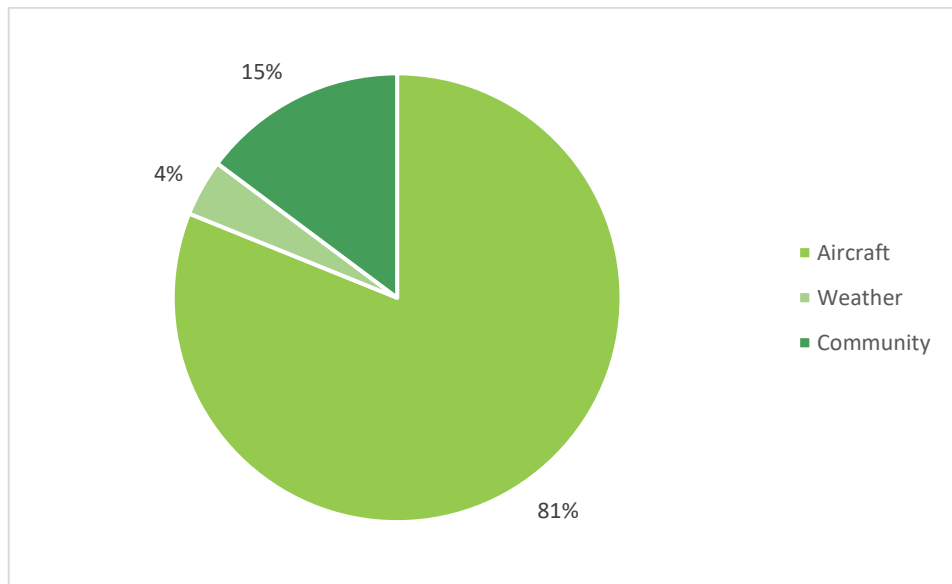


Figure 78: NMT 20 Noise Event Types

## NMT Operational Status

To ensure that Noise Monitoring Terminals keep working within specific limits, internal calibration checks are completed every 6 hours. Outside of the 6 hourly calibration checks, NMTs will require maintenance and during this time will not record noise events. The operational status of NMT 20: Coast Road is presented in Figure 79.

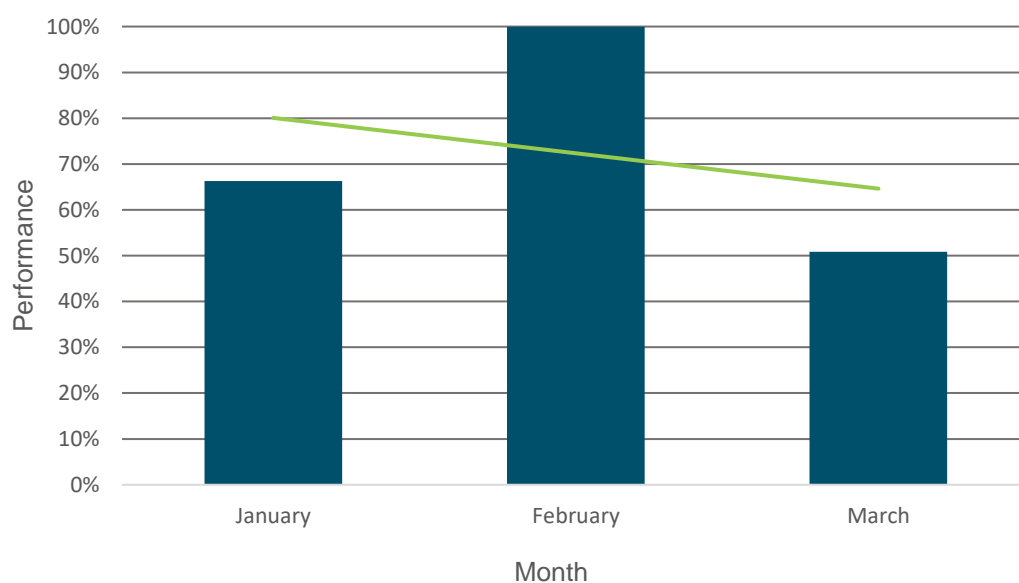


Figure 79: Operational status of NMT 20, January – March 2023

## Noise Levels

Figure 80 presents the average noise levels measured at NMT 20 during daytime periods, which are defined to be from 07:00 in the morning to 22:59 in the evening. Recorded noise levels during these time segments are therefore averaged over a 16-hour window.

This procedure is followed both for all noise events, and for those events that were correlated to aircraft movements. The results shown are presented monthly.

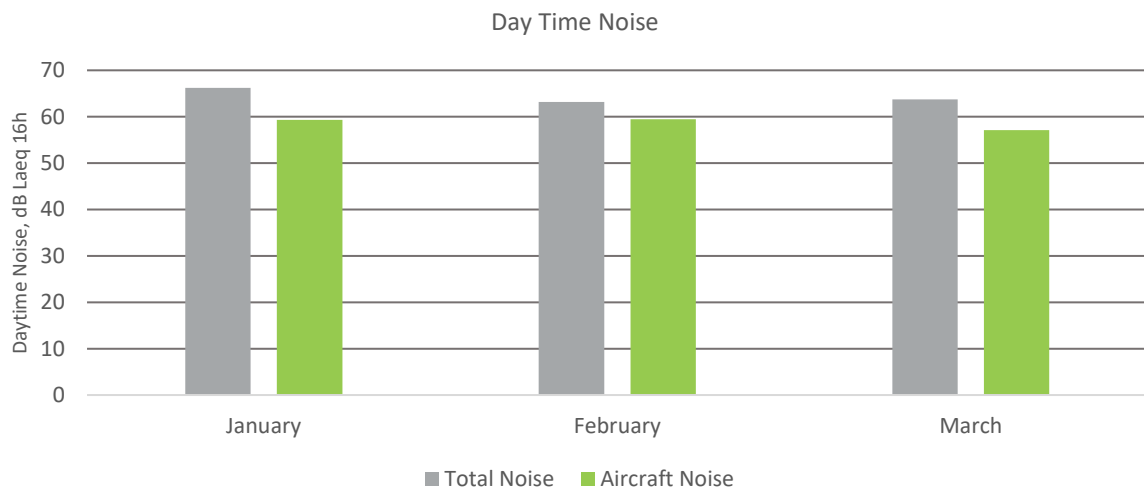


Figure 80: Averaged daytime noise levels for NMT 20, January – March 2023

Noise levels during the night are determined using a similar method. The night period is defined as a period between 23:00 in the evening to 06:59 in the morning. Noise levels are therefore averaged over an 8-hour window. Figure 81 presents these results monthly.

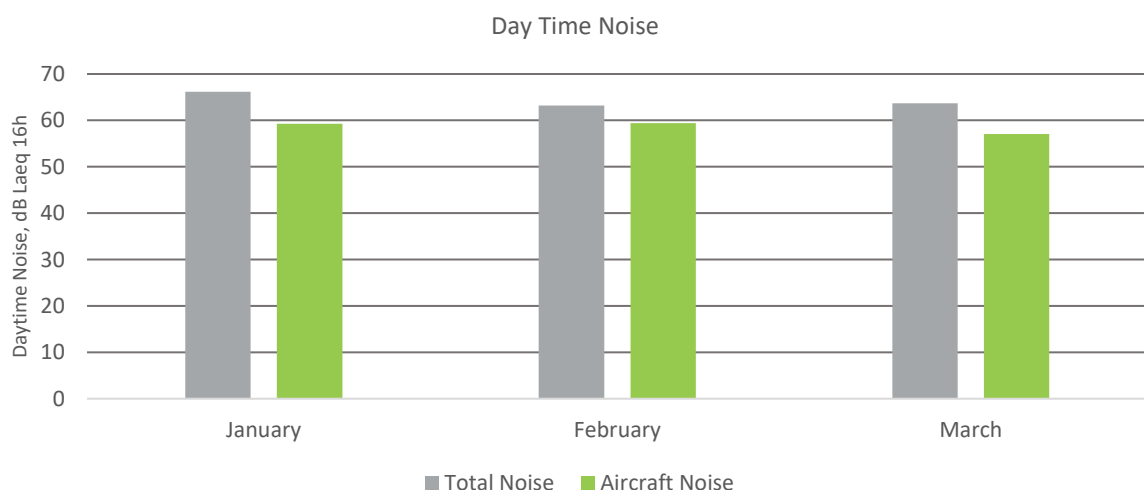


Figure 81: Averaged nighttime noise levels for NMT 20, January – March 2023

The hourly noise distribution at NMT 20 as shown in Figure 82.

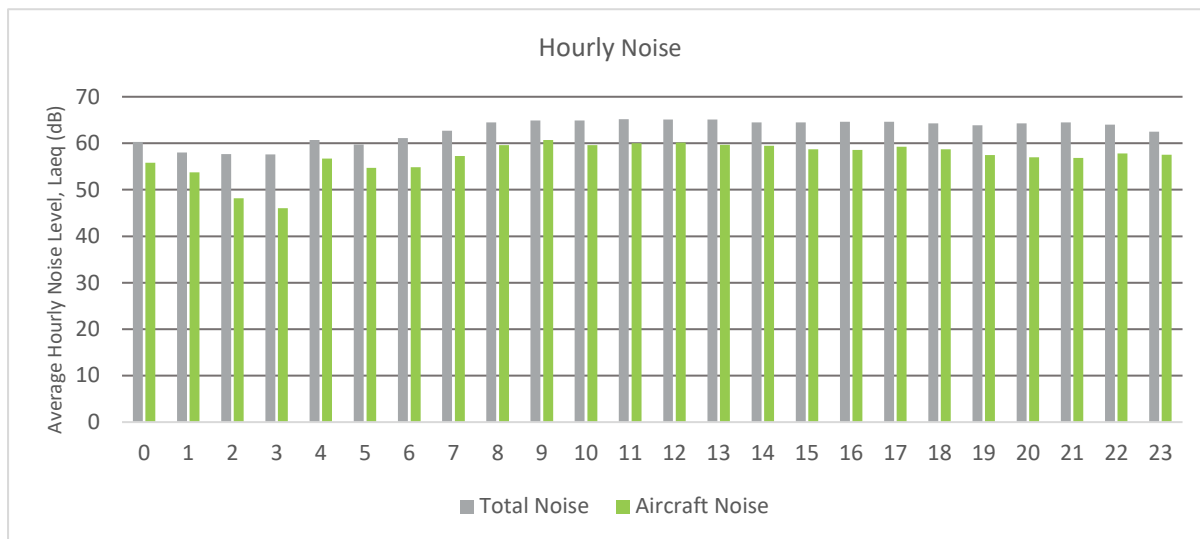


Figure 82: Averaged hourly noise levels for NMT 20, January – March 2023

Figure 83 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 20.

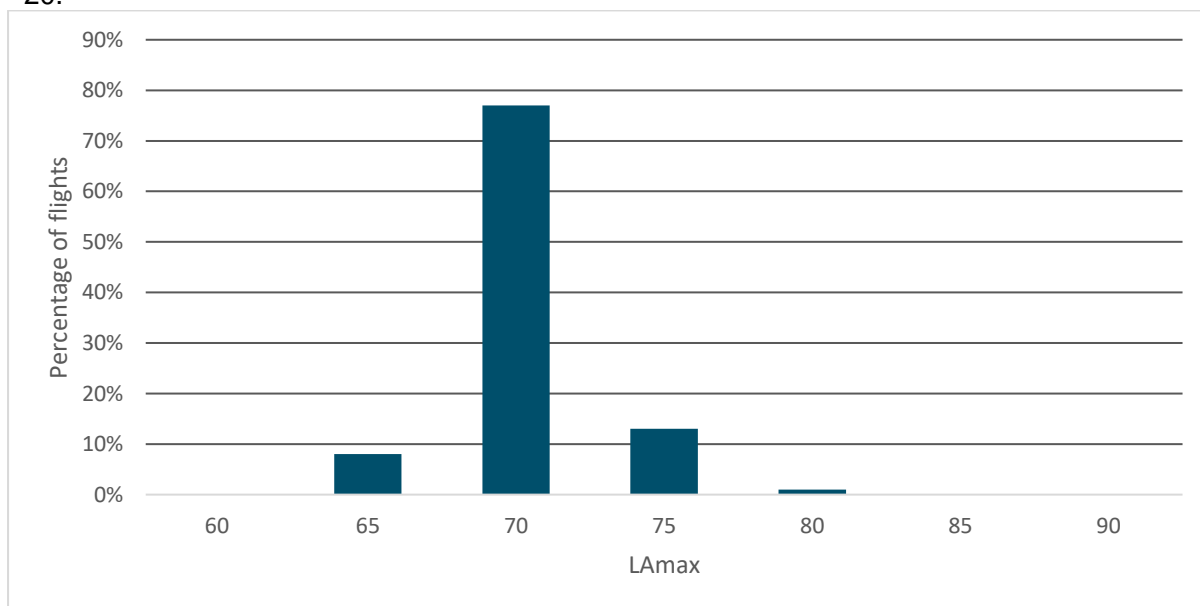


Figure 83: LAmax levels distribution for NMT 20, January – March 2023

Table 14 shows the top 10 loudest correlated aircraft types from the total count of correlated noise events to NMT 20.

Aircraft Type	Max dB	Total Count
C525	78.9	1
B77W	76.6	150
A332	76.5	36
A333	76.4	481
B764	76.3	179
C650	76.1	4
E121	76.1	1
A339	76	2
B77L	75.9	24
E50P	75.7	2

Table 14: LAmax by aircraft types correlated to NMT 20, January – March 2023



# Glossary

Symbol	Description	Unit
LAeq	A-weighted, equivalent noise level, averaged per hour over a half year period.	[dB]
LAeq, 8 h	A-weighted, equivalent noise level, averaged over eight hours per month between 23:00 and 07:00 (nighttime), hence 8 hour equivalent.	[dB]
LAeq, 16 h	A-weighted, equivalent noise level, averaged over 16 hours per month between 07:00 and 23:00 (daytime), hence 16 hour equivalent.	[dB]
LA,MAX	A-weighted, maximum recorded noise level per correlated aircraft-noise event, instead of indicating the average noise levels for a reference duration.	[dB]

# Report inquiries

Phone: +61 2 9463 4503

Online form: <https://www.dublinairport.com/about-us/-community-affairs/noise-complaint>

This report is drafted by Envirosuite on behalf of Dublin Airport.