envirosuite

Noise Monitoring Report

January - June

2023

DublinAirport

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Executive Summary

This noise monitoring report is drafted for the period January - June 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 overflown 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 half of 2023 for all operational NMTs. As one may expect, NMTs frequently overflown (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	9,073	15,939	25,012
2	Arrivals Runway 28L, Departures Runway 10R	35,231	19,103	54,334
5	Arrivals Runway 16, Departures Runway 34	1	0	1
6	Arrivals Runway 34, Departures Runway 16	1	0	1
7	Arrivals Runway 10L, Departure Runway 28R	1	3	4
8	Arrival Runway 10L, Departure Runway 28R	13	0	13
10	Arrival Runway 10L, Departure Runway 28R	248	13,749	13,997
20	Arrivals Runway 28L, Departures Runway 10R	22,243	8428	30,671

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	60.8	58.5	59.8	58.3
2	62.0	61.1	57.5	56.2
3	61.7	57.3	54.6	42.6
4	56.1	46.1	52.4	44.3
5	73.2	50.8	75.1	39.2
6	57.9	38.5	56.1	32.4
7	73.5	44.6	67.7	36.8
8	57.4	37.7	51.9	31.9
10	63.8	59.8	59.3	55.2
20	64.0	59.8	59.1	54.6

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 1st to June 30th 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 June 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.

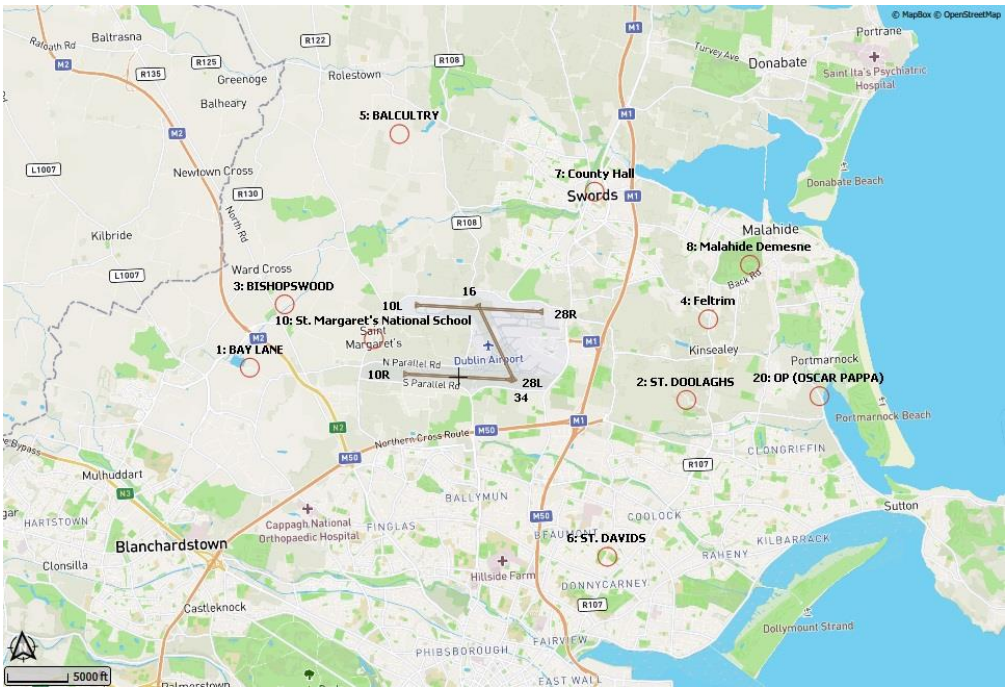

Figure 2: Noise Monitoring Terminal locations

General Statistics

Traffic

In the first half of 2023, Dublin Airport handled a total of 112,821 flights and 15,646,696 passengers. This is an increase of 17% in traffic and a decrease of 23% 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.

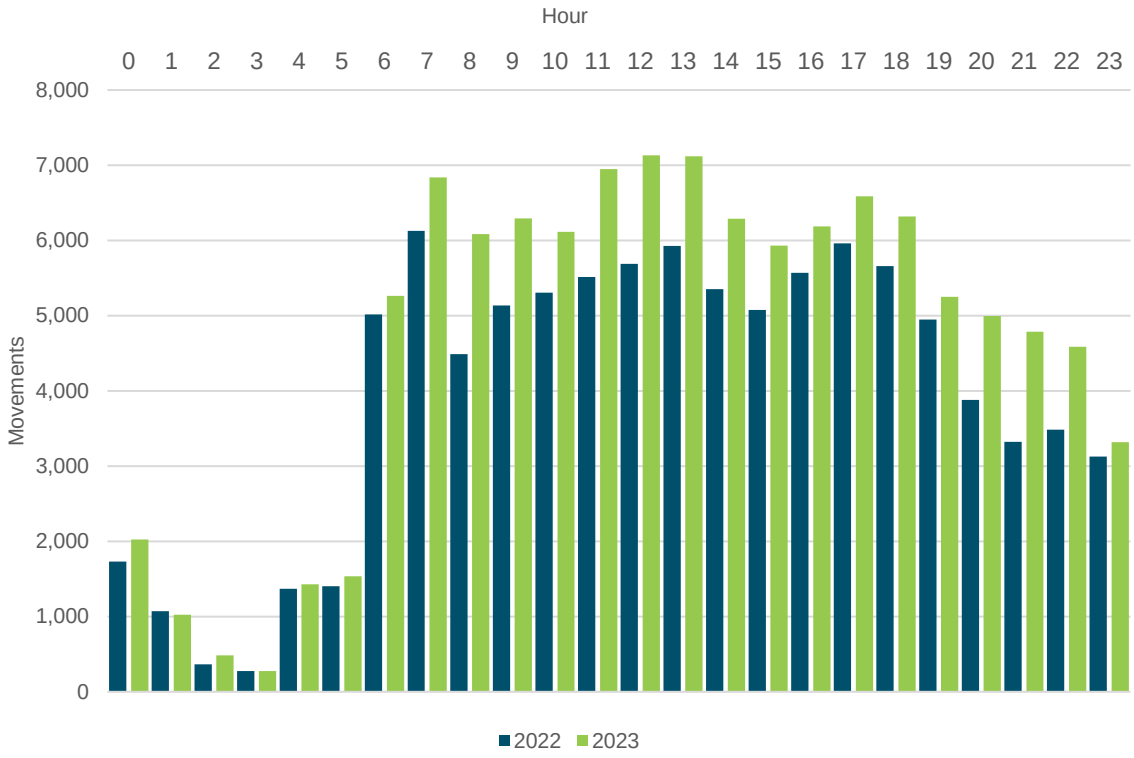

Figure 3: Hourly distribution of movements from January – June 2022 vs 2023

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 61% 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.

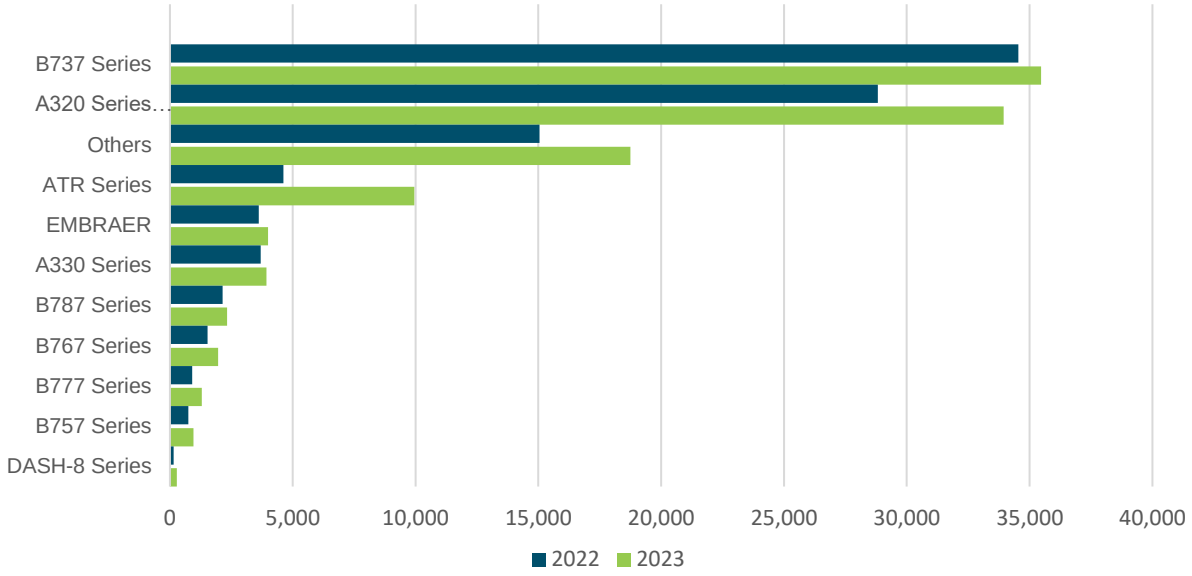

Figure 4: Aircraft type distribution January – June 2022 vs 2023

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 both the first half of 2022 and 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 47% of all movements in the period January to June 2023 versus 78% in 2022. Runway 10L/R, the runway for aircraft landing and departing in the easterly direction, was 36% of the movements in the period January to June 2023 versus 19% in 2022. The remaining percentage of the movements in 2022 and 2023 took place on the cross runway 16/34.

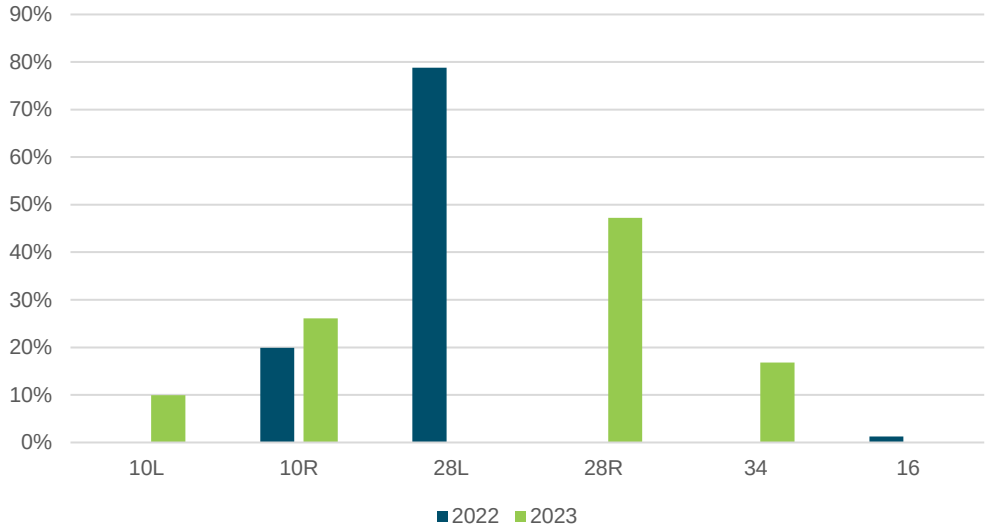

Figure 5: Runway usage, January – June 2022 vs 2023

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	673	2,386	684	2,385
NMT2	858	2,550	861	2,429
NMT3	684	2,390	599	2,154
NMT4	999	2,875	1,011	2,689
NMT5	862	4,725	1,797	3,007
NMT6	2,759	3,012	1,069	2,202
NMT7	0	3,394	3,284	3,541
NMT8	0	2,730	1,183	2,957
NMT10	889	1,261	245	1,139
NMT20	1,513	3,453	1,547	3,322

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 half split into traffic flowing easterly runway 10L/10R and westerly runway 28L/28R.

January 2023 Easterly operations

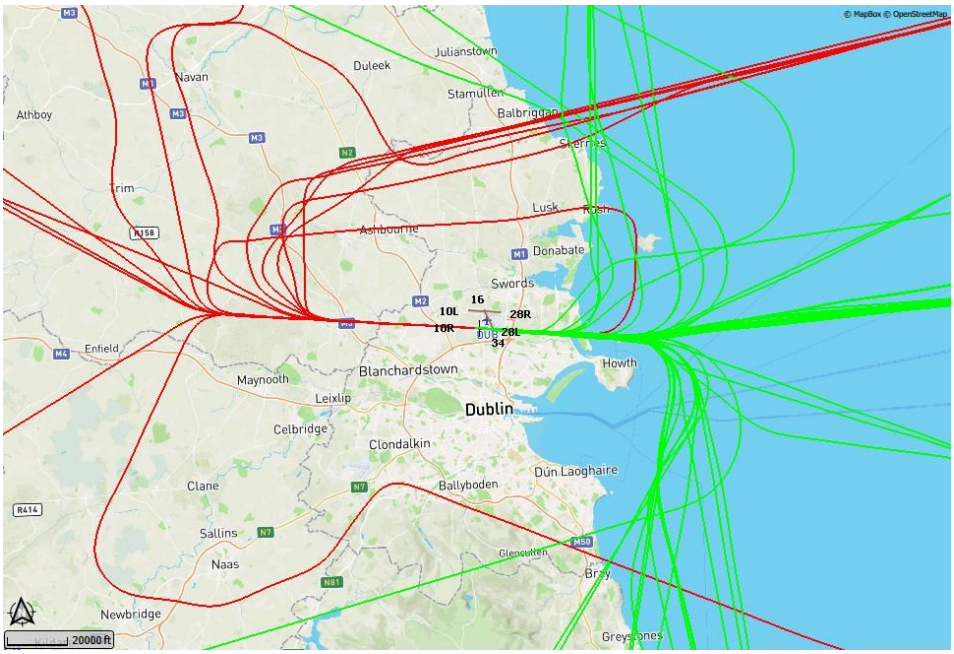

Figure 6: 63 Easterly operations on 10th January 2023

January 2023 Westerly operations

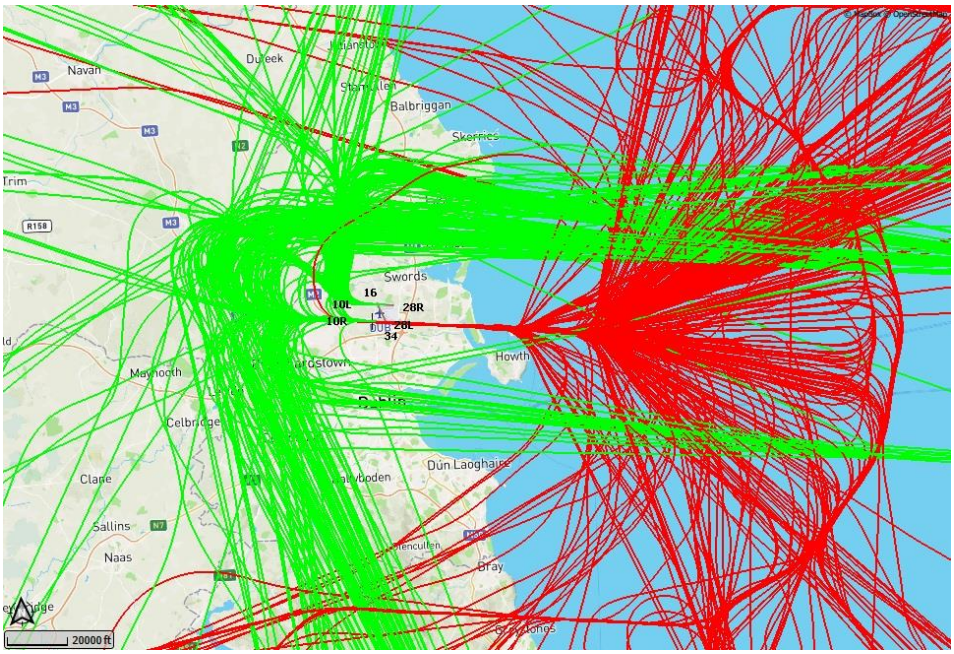

Figure 7: 657 Westerly operation on 6th January 2023

February 2023 Easterly operations

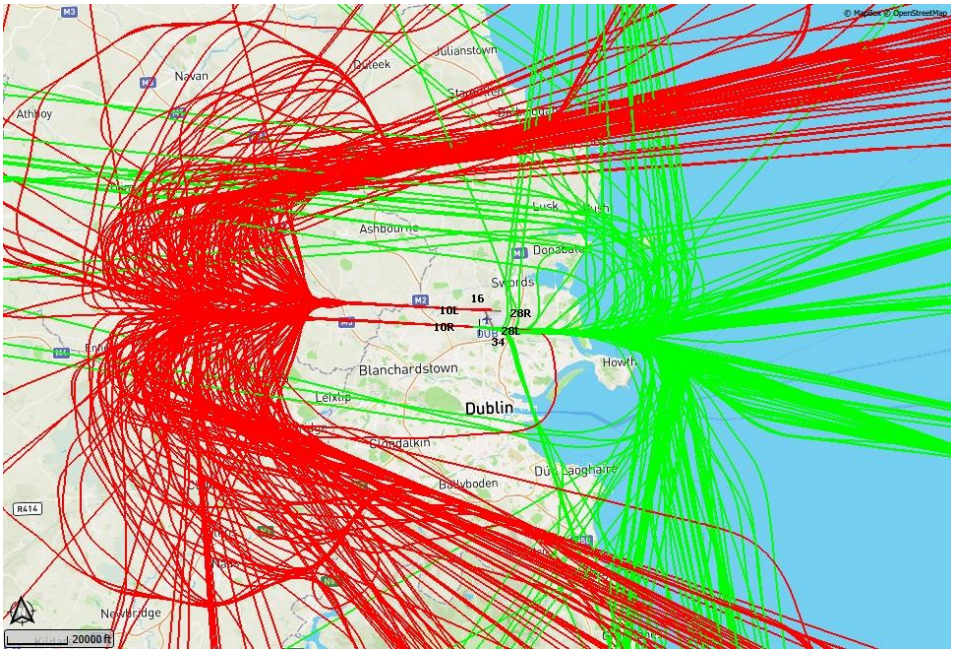

Figure 8: 632 Easterly operations on 26th February 2023

February 2023 Westerly operations

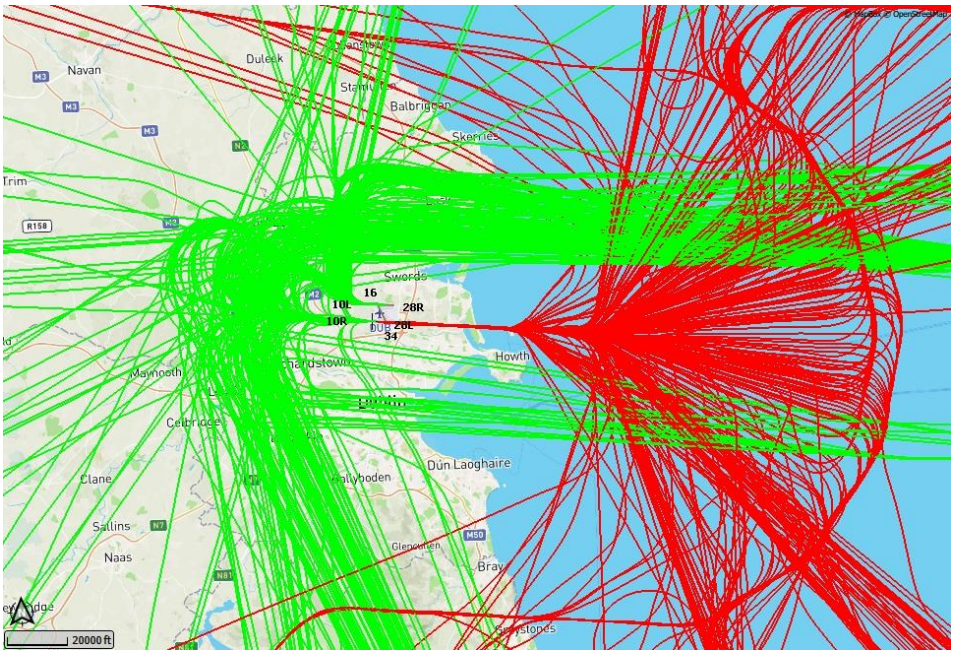

Figure 9: 703 Westerly operations on 10th February 2023

March 2023 Easterly operations

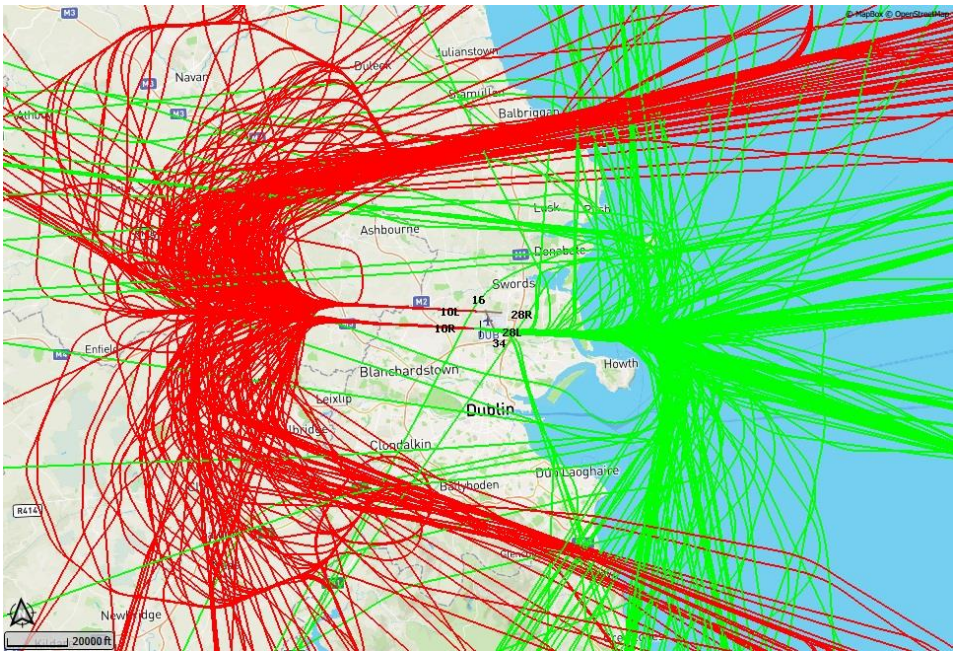

Figure 10: 614 Easterly operations on 26th March 2023

March 2023 Westerly operations

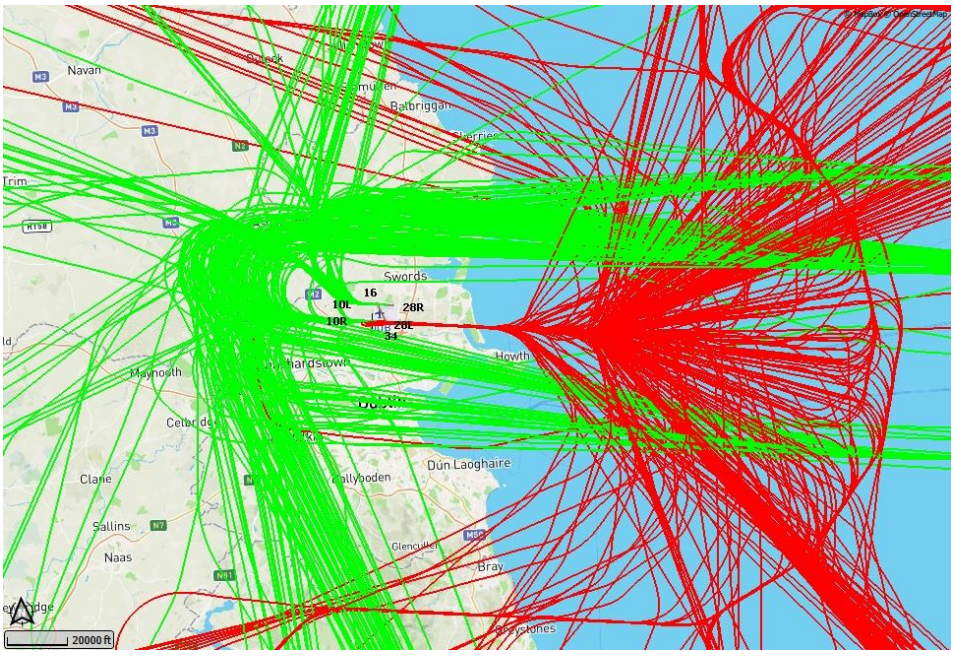

Figure 11: 685 Westerly operations on 19th March 2023

April 2023 Easterly Operations

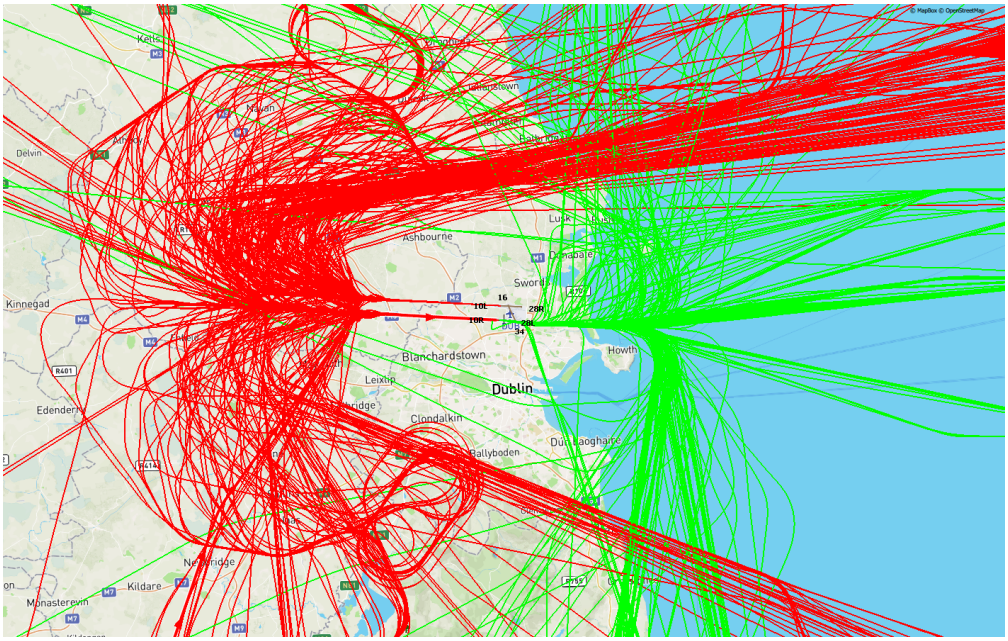

Figure 122: 691 Easterly operations on 20th April 2023

April 2023 Westerly Operations

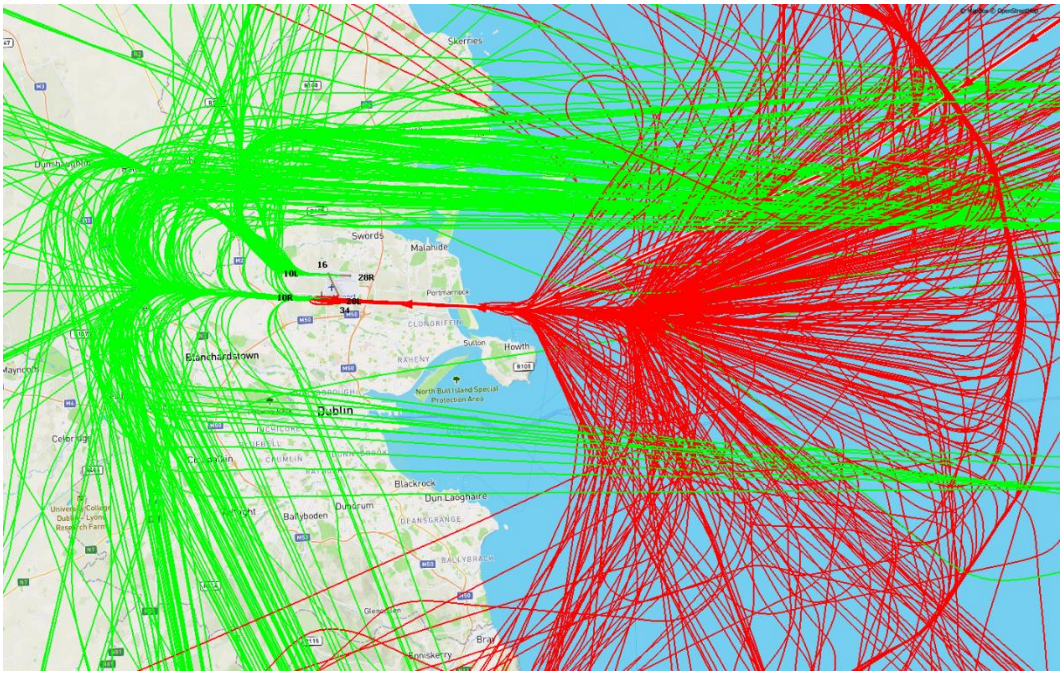

Figure 133: 719 Westerly operations on 14th April 2023

May 2023 Easterly Operations

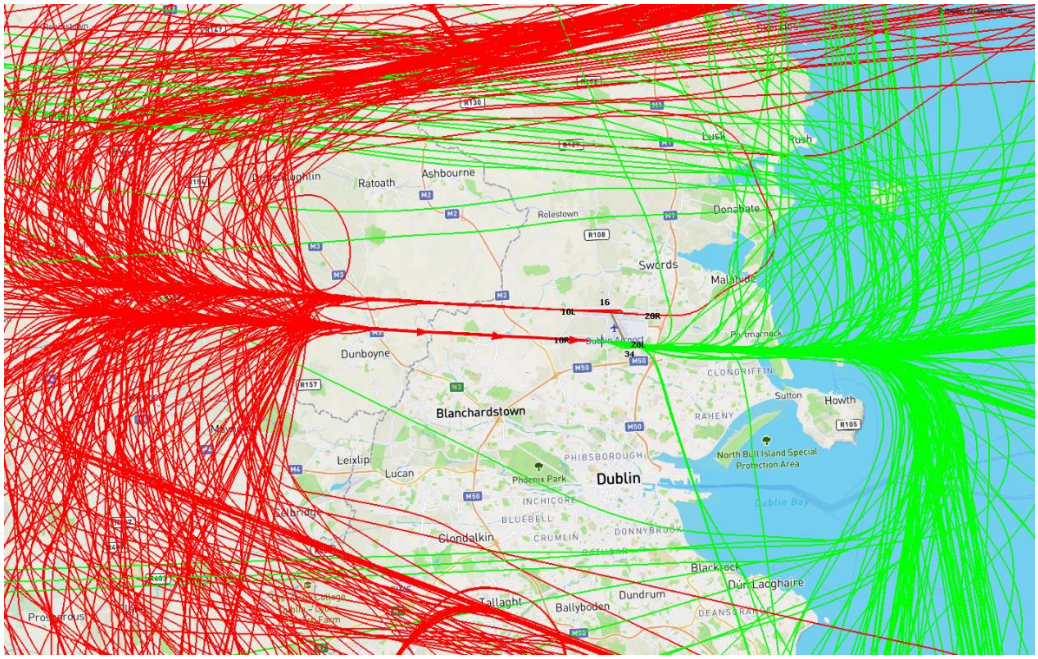

Figure 144: 711 Easterly operations on 30th May 2023

May 2023 Westerly Operations

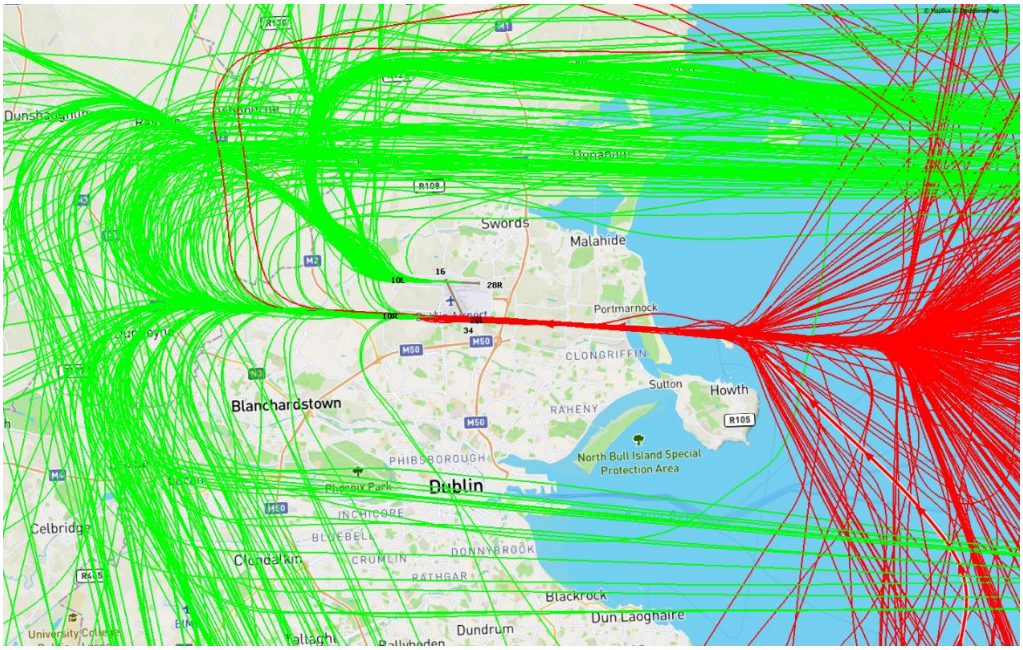

Figure 155: 742 Westerly operations on 24th May 2023

June 2023 Easterly Operations

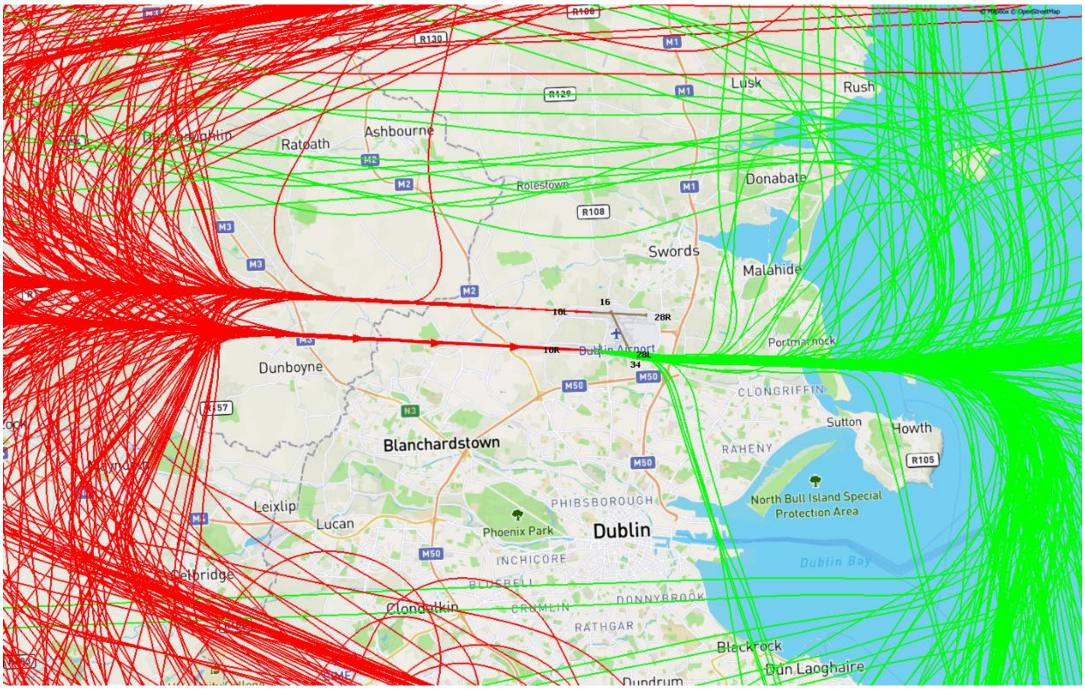

Figure 166: 752 Easterly operations on 2nd June 2023

June 2023 Westerly Operations

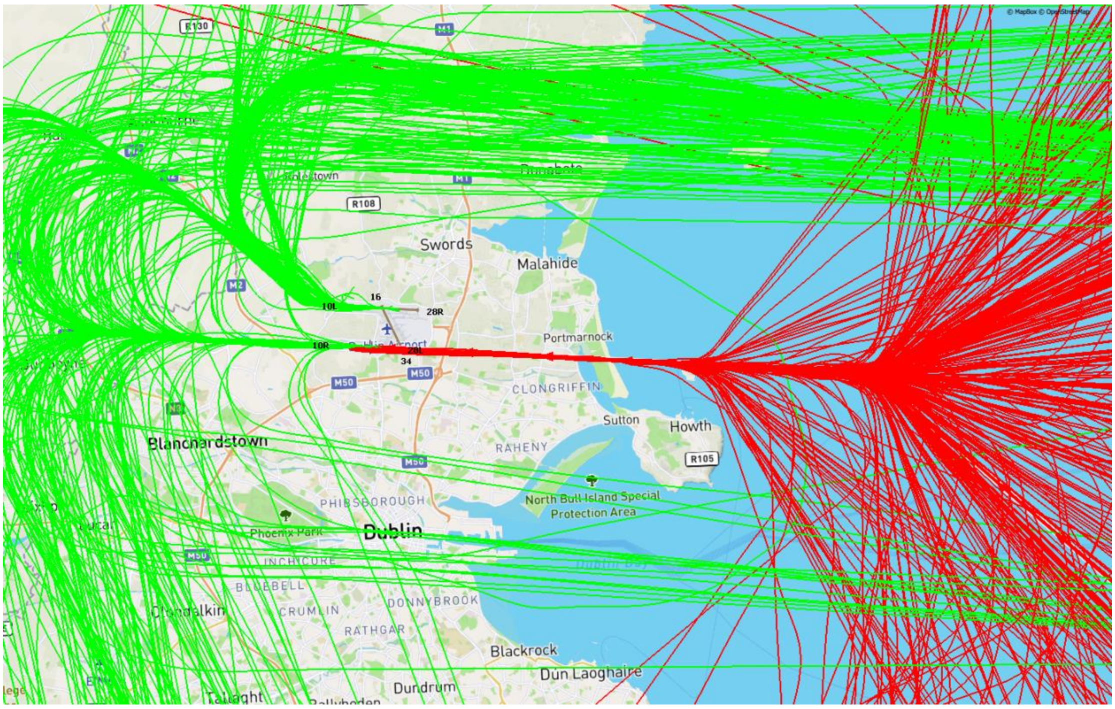

Figure 177: 761 Westerly operations on 30th June 2023

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, 1hour. 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.
- LAmax: - LAmax 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.
- LAmax 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 1st up to and including June 30th 2023. The categories are as followed:

Average monthly LAmax noise levels per NMTs are shown in Figure 12

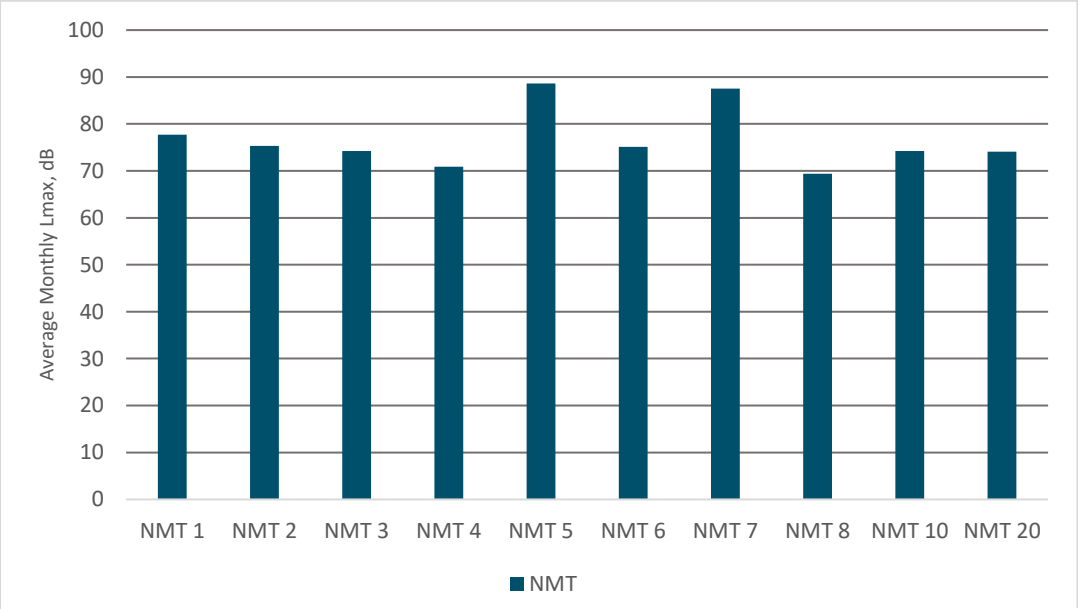

Figure 18: Average LAmax levels distribution for NMTs, January – June 2023

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

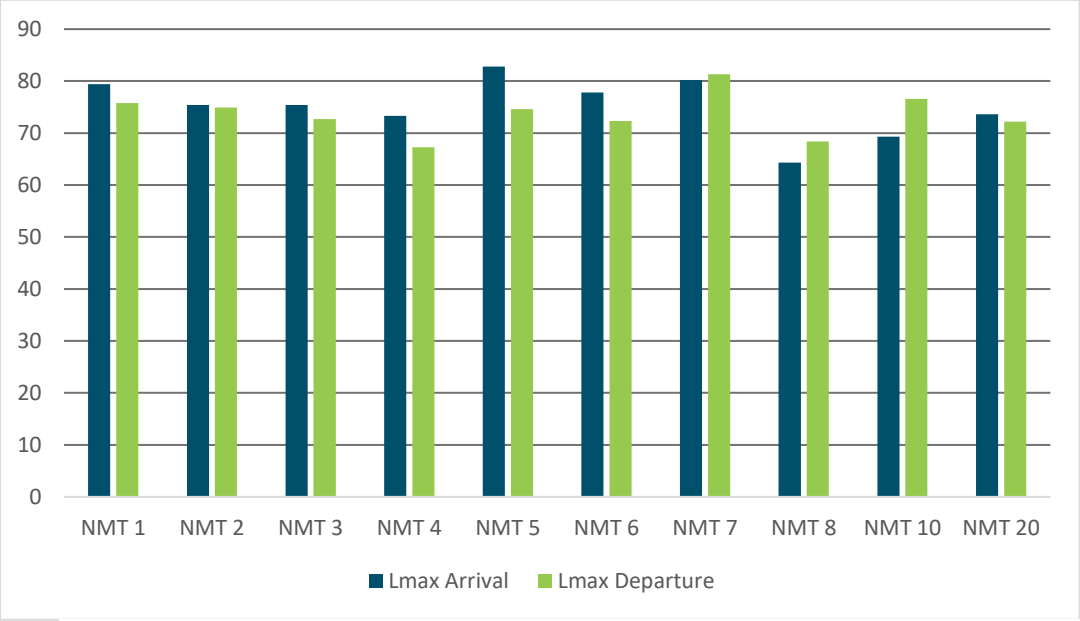

Figure 19: Average LAmax levels distribution for NMTs for arriving and departing aircraft, January – June 2023

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.

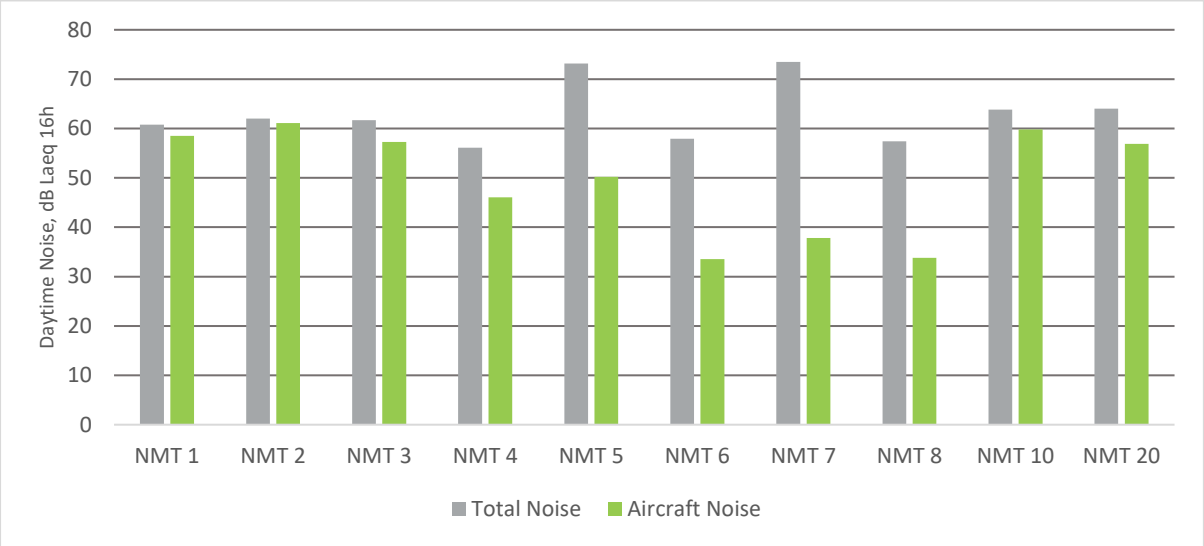

Figure 20: Averaged daytime noise levels per NMTs, January – June 2023

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.

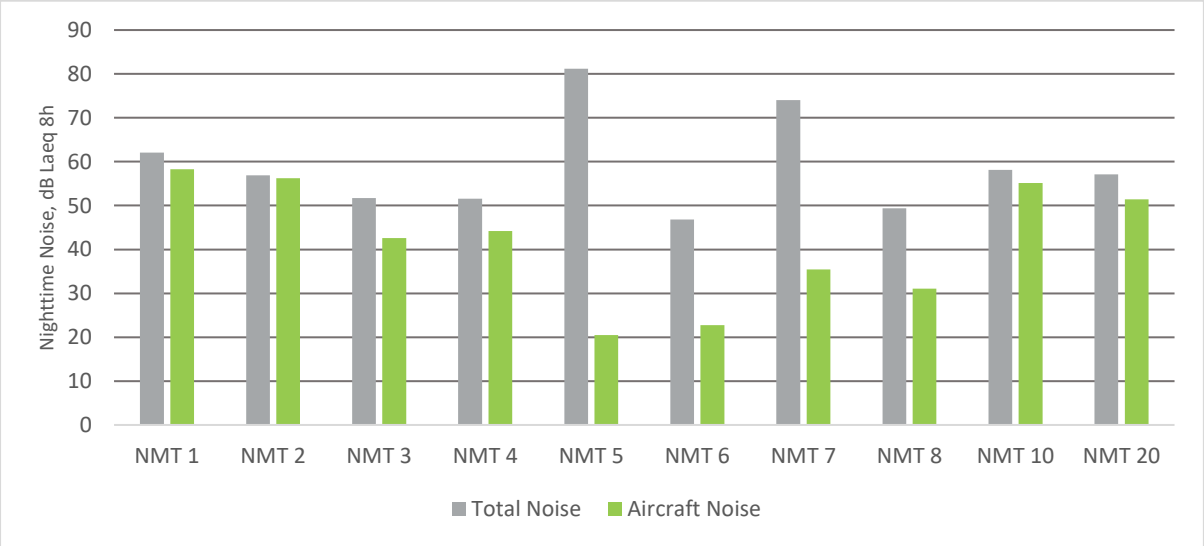

Figure 21: Averaged nighttime noise levels per NMTs, January - June 2023

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 1st up to and including June 30th, 2023 are presented in this section.

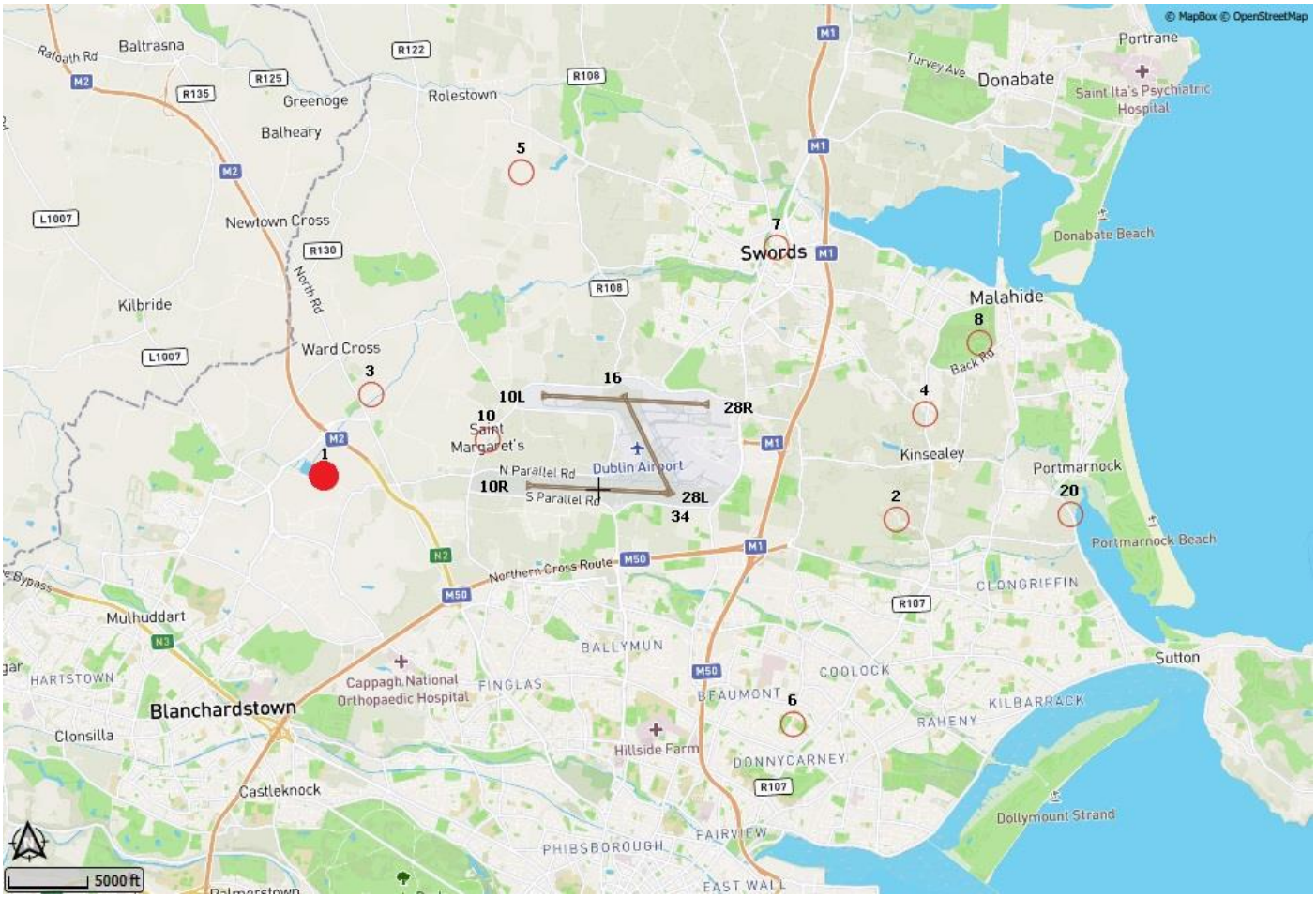

Figure 22: Noise Monitoring Terminal Bay Lane Location

Noise Events

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

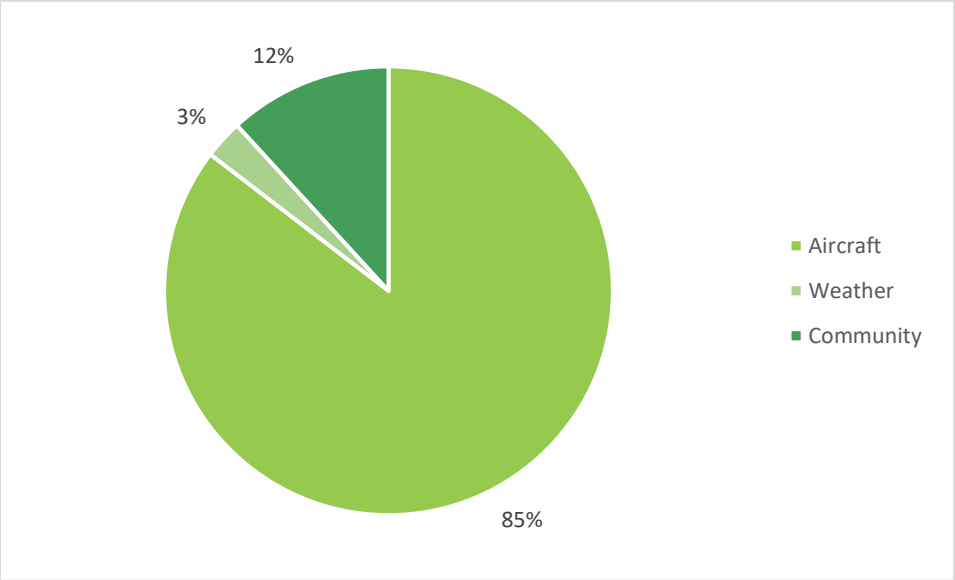

Figure 23: NMT 1 Noise Event Types

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.

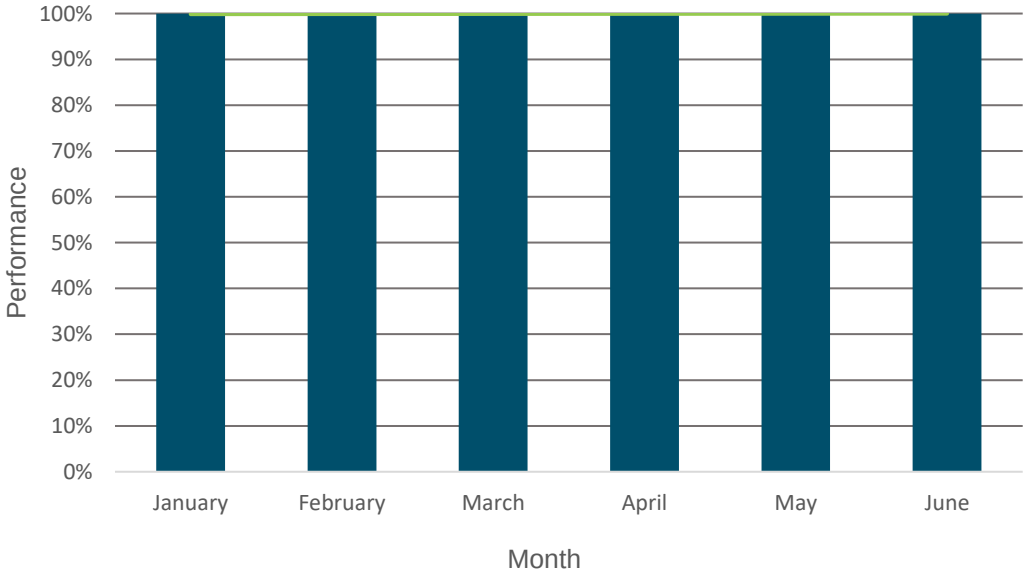

Figure 24: Operational status of NMT1, January – June 2023

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.

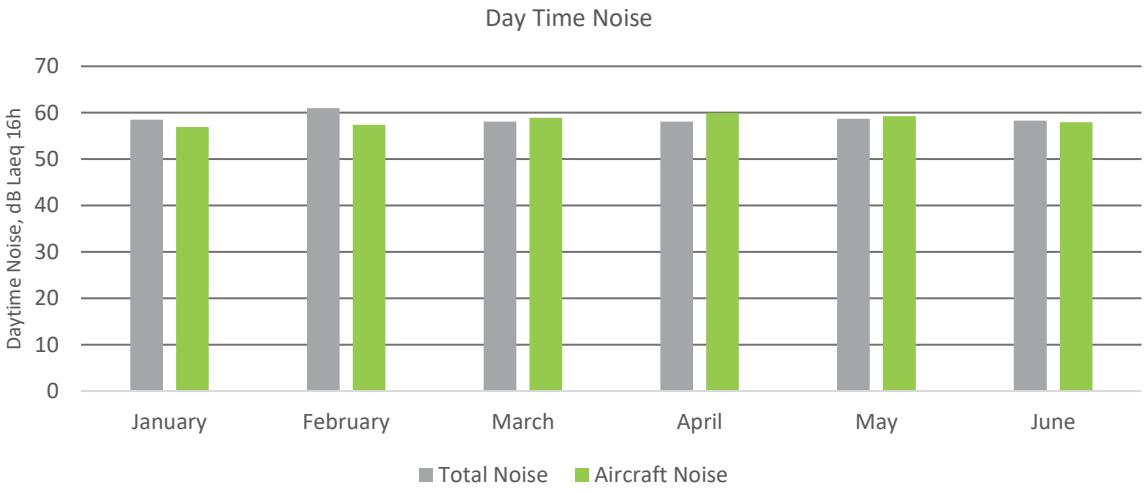

Figure 25: Averaged daytime noise levels for NMT 1, January – June 2023

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.

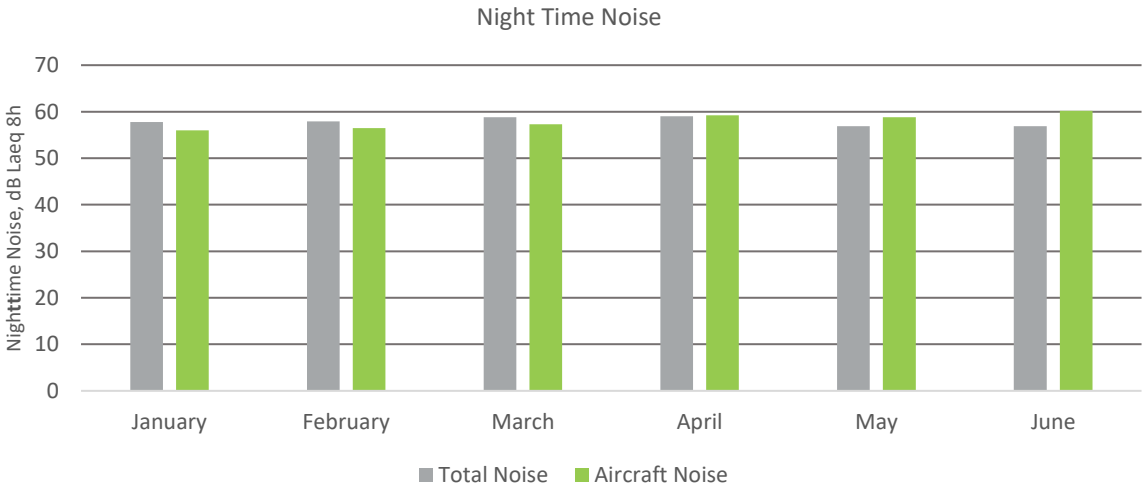

Figure 26: Averaged nighttime noise levels for NMT 1, January – June 2023

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

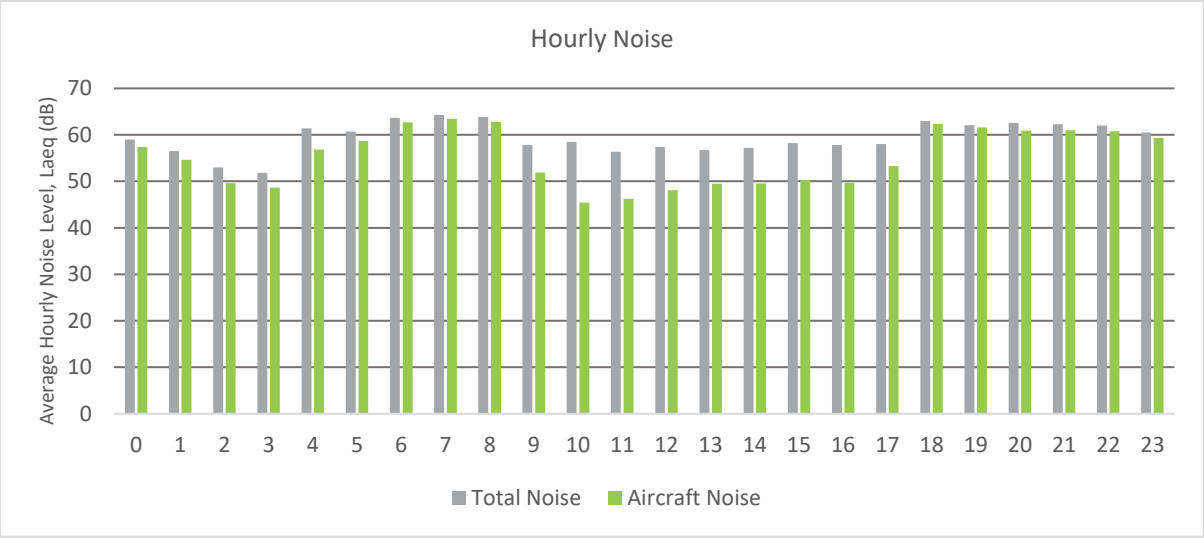

Figure 27: Averaged hourly noise levels for NMT 1, January - June 2023

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

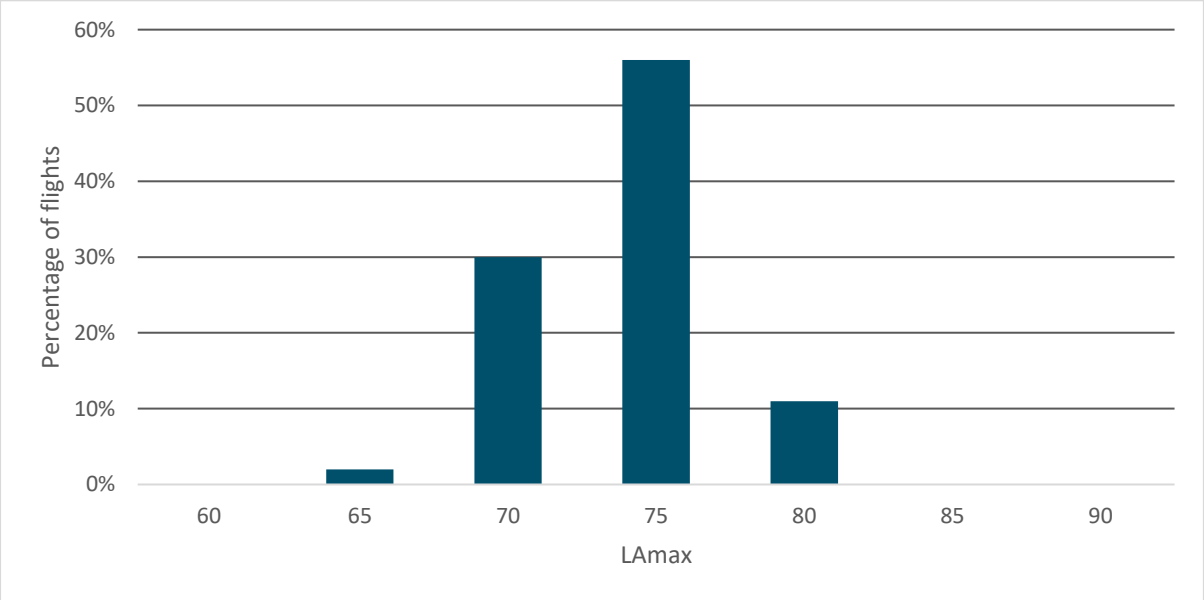

Figure 28: LAmax levels distribution for NMT 1, January – June 2023

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
A346	83.8	1
B764	83.4	64
B772	81.9	49
A35K	81.4	17
B77L	81.4	91
A333	80.9	462
A332	80.7	45
B77W	80.6	257
B78X	80	33

Table 5: LAmax by aircraft types correlated to NMT 1, January - June 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 1st up to and including June 30th, 2023 are presented in this section.

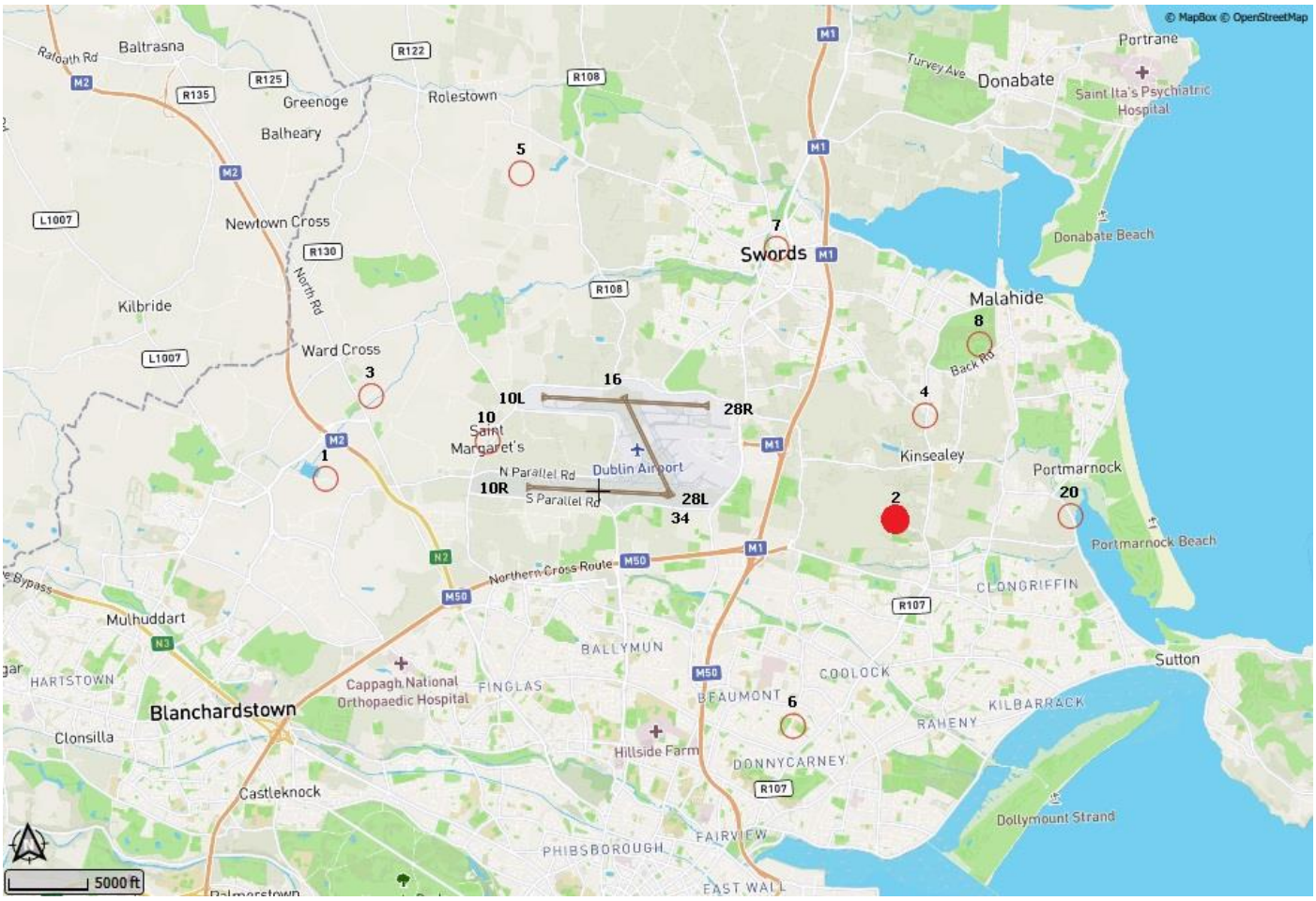

Figure 29: Noise Monitoring Terminal St. Doolaghs Location

Noise Events

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

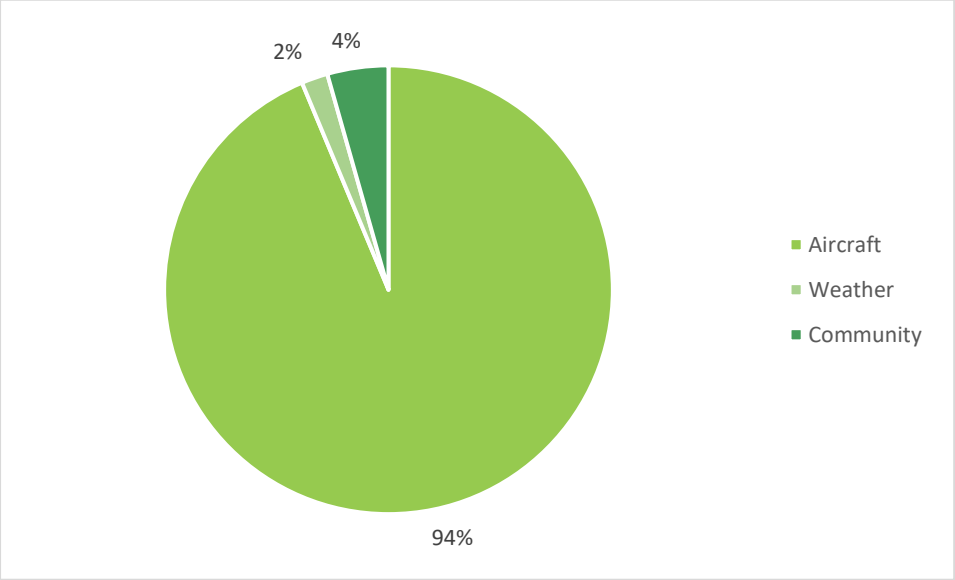

Figure 30: NMT 2 Noise Event Types

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.

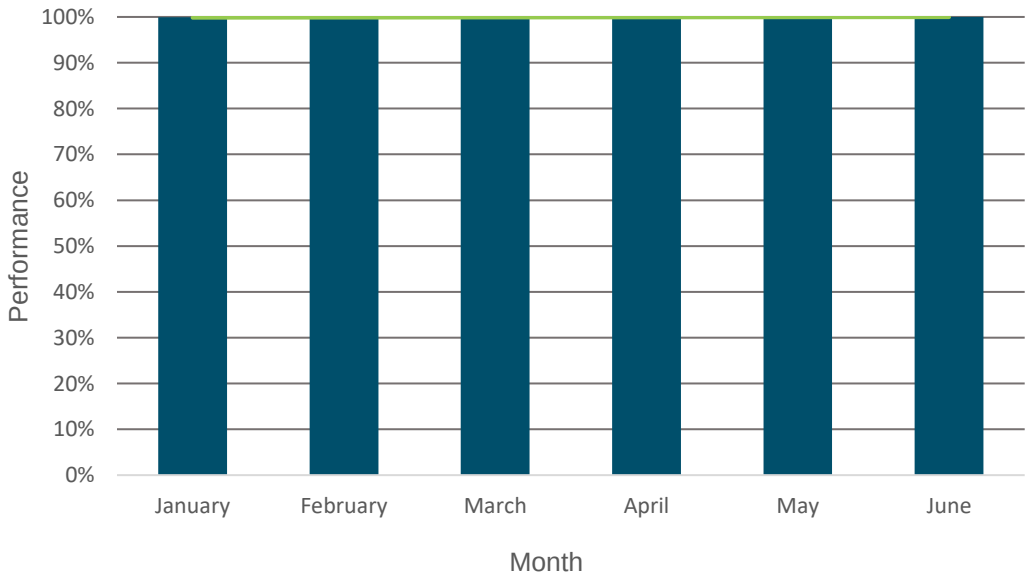

Figure 31: Operational status of NMT 2, January – June 2023

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.

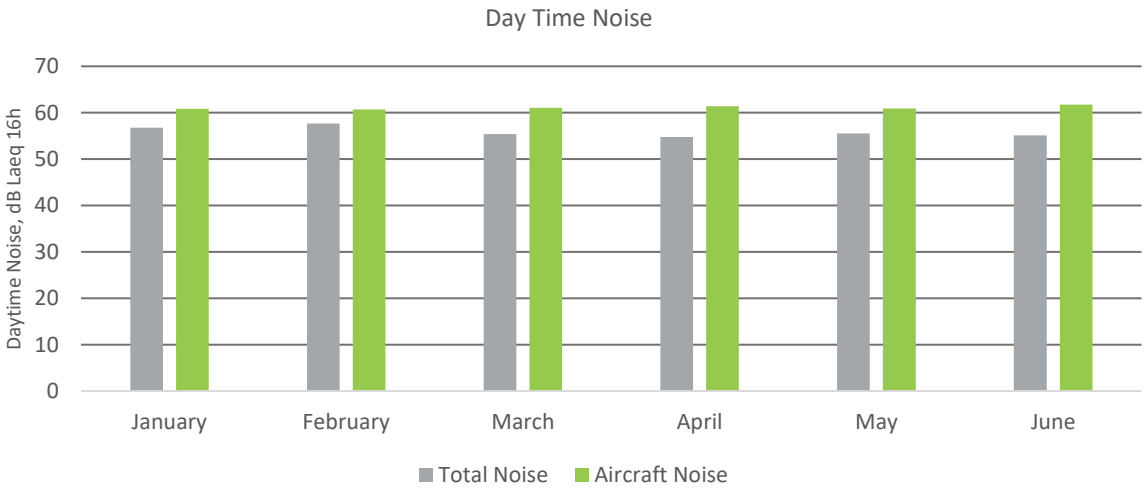

Figure 32: Averaged daytime noise levels for NMT 2, January – June 2023

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.

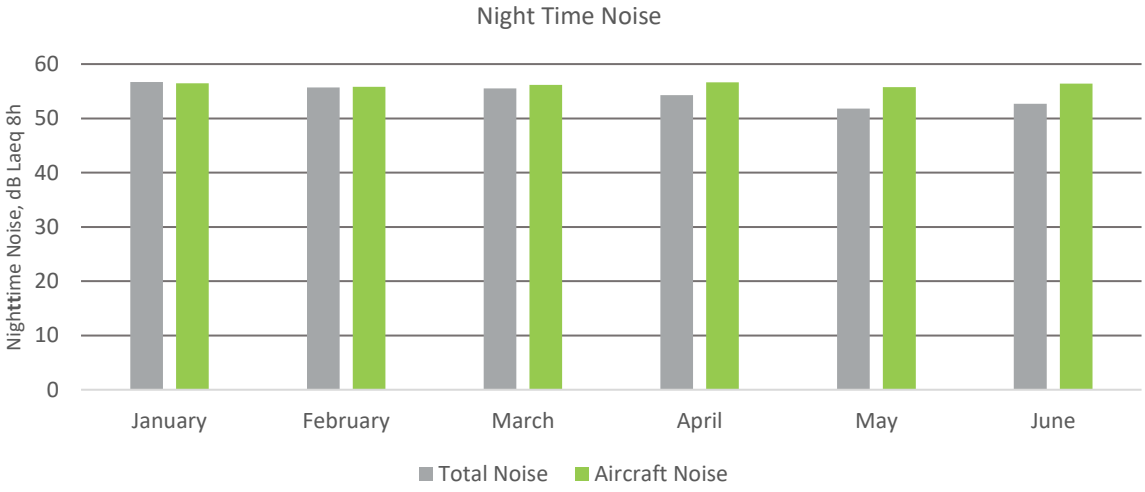

Figure 33: Averaged nighttime noise levels for NMT 2, January – June 2023

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

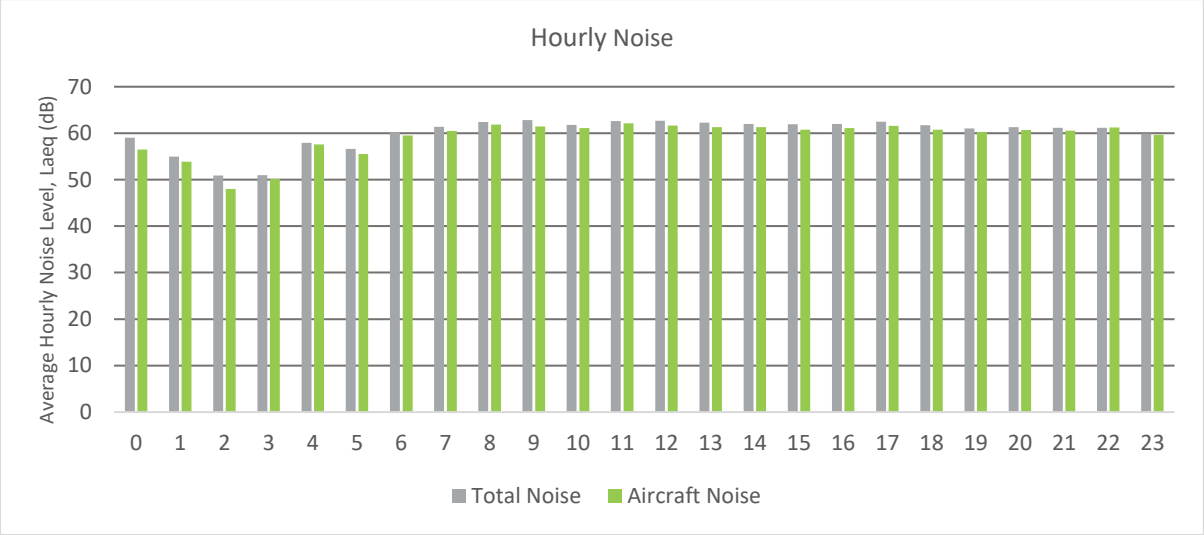

Figure 34: Averaged hourly noise levels for NMT 2, January – June 2023

Figure 29 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 2.

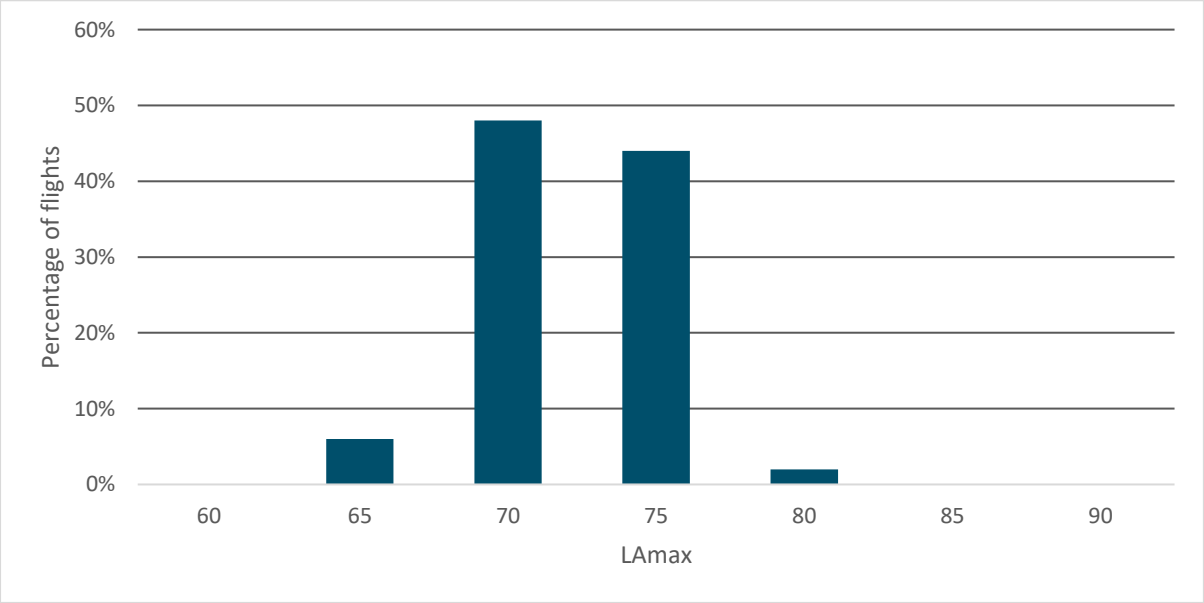

Figure 35: LAmax levels distribution for NMT 2, January – June 2023

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
C17	84	16
B764	79.3	346
A333	78.6	1718
A332	78.4	234
B772	78.4	116
B77W	78.2	418
B733	78	16
A346	77.6	1
B77L	77.6	103
B734	77.3	147

Table 6: LAmax by aircraft types correlated to NMT 2, January - June 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 1st up to and including June 30th, 2023 are presented in this section.

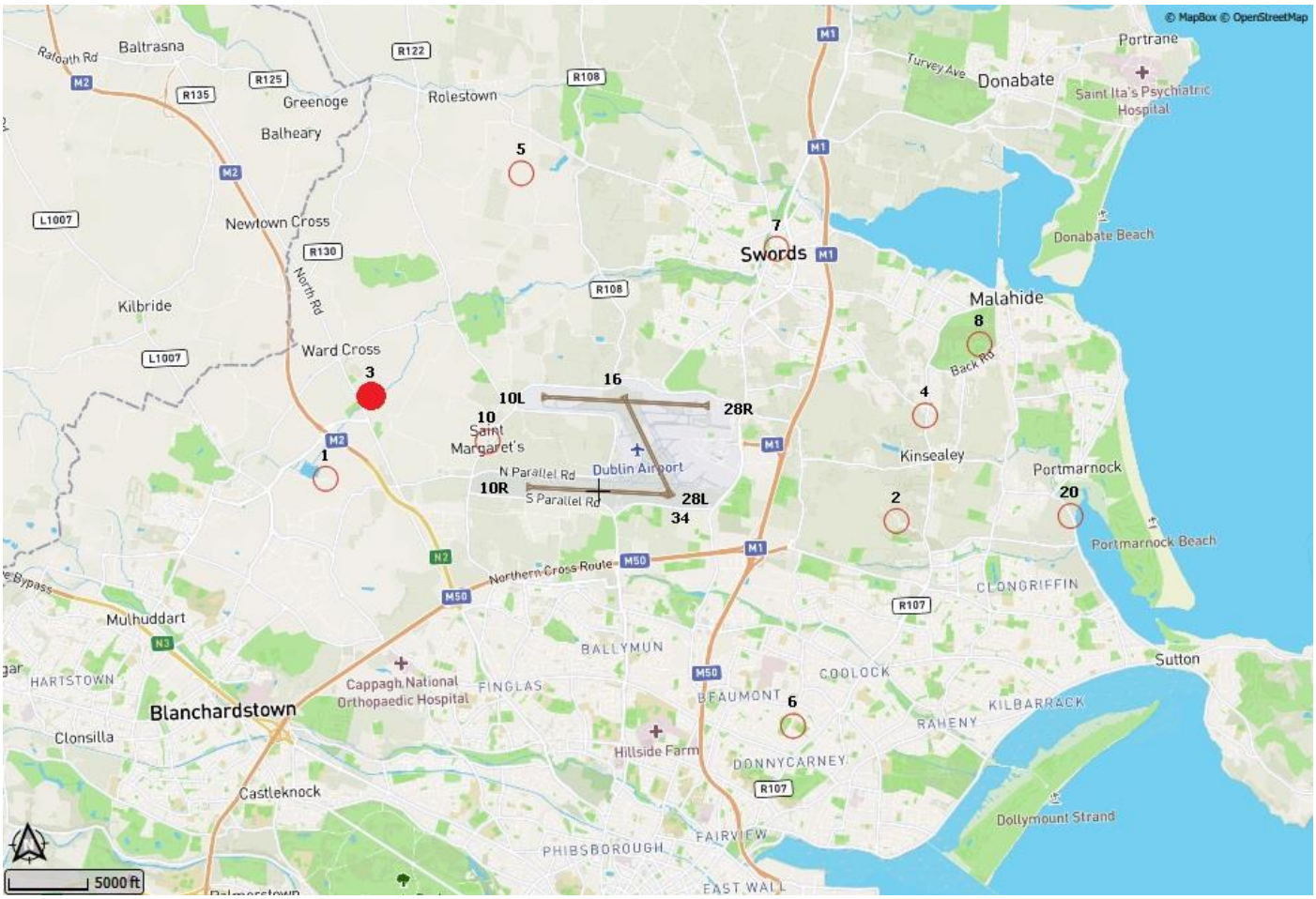

Figure 36: Noise Monitoring Terminal Bishopswood Location

Noise Events

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

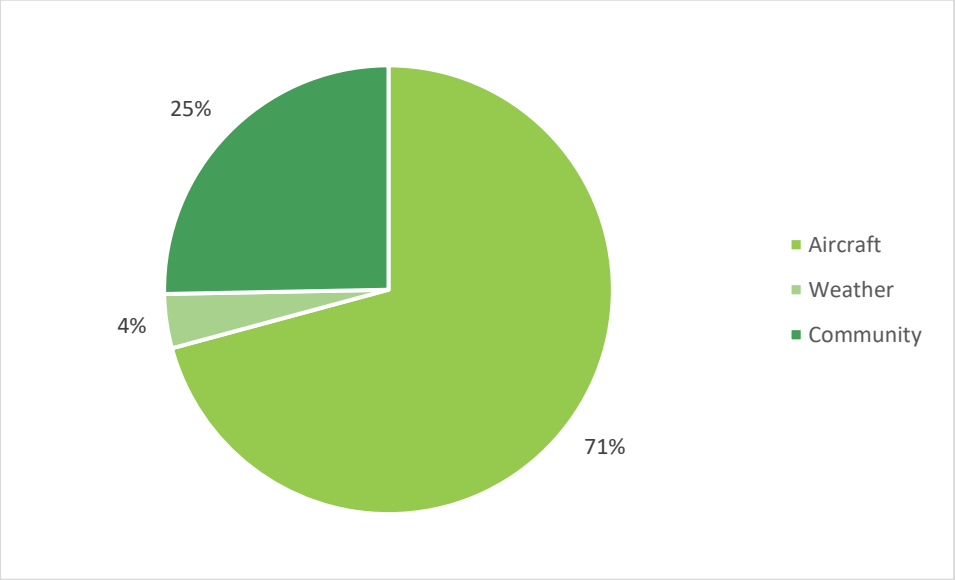

Figure 37: NMT 3 Noise Event Types

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.

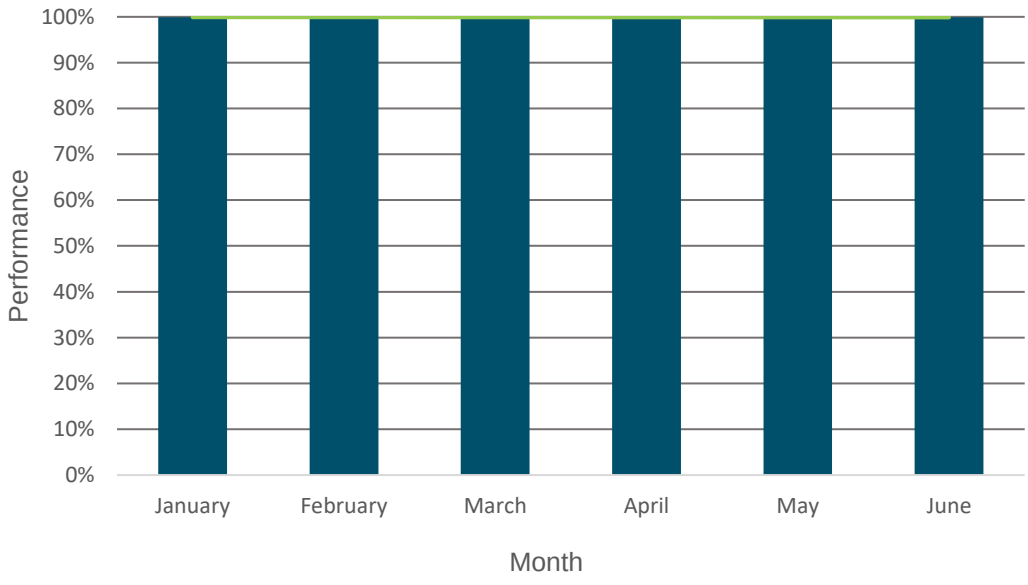

Figure 38: Operational status of NMT 3, January – June 2023

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.

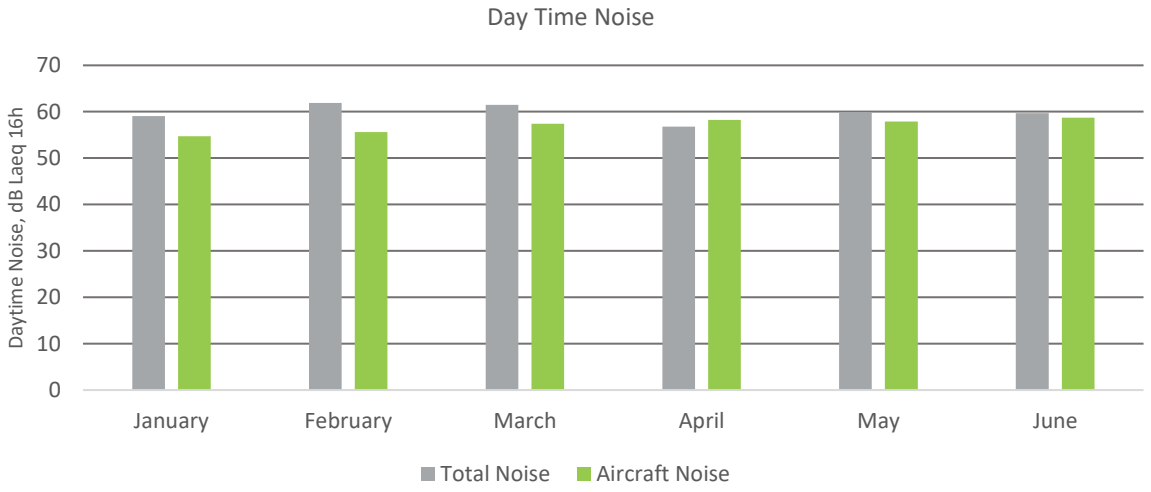

Figure 39: Averaged hourly noise levels for NMT 3, January – June 2023

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.

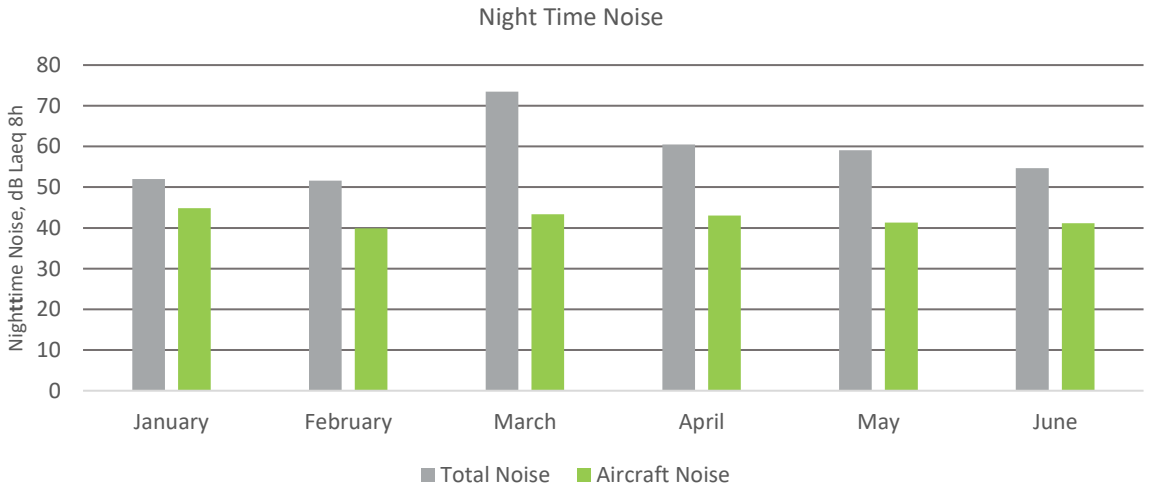

Figure 4018: Averaged nighttime noise levels for NMT 3, January – June 2023

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

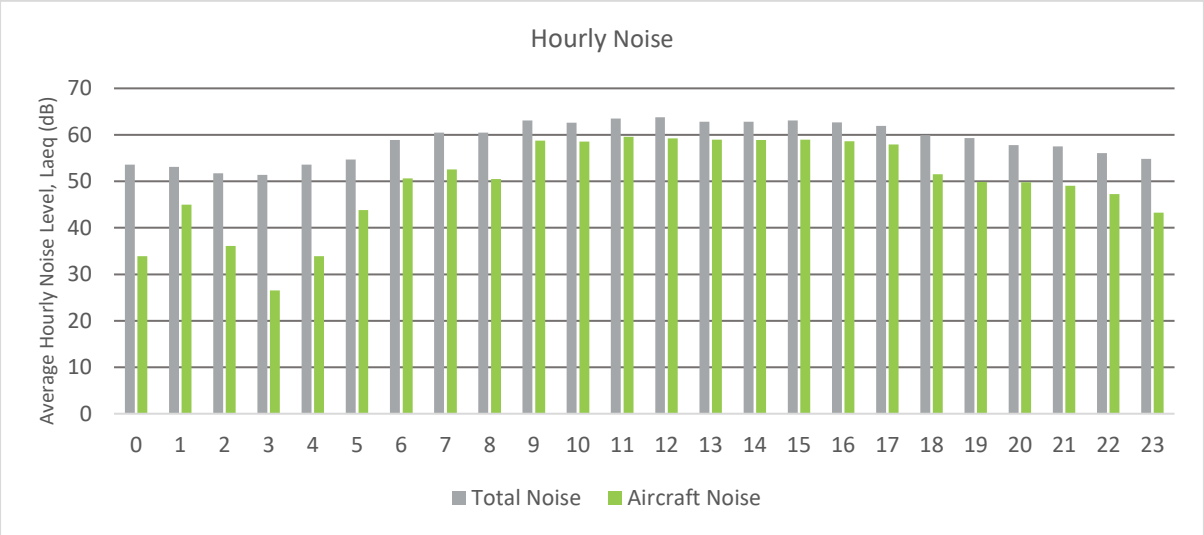

Figure 41: Averaged hourly noise levels for NMT 3, January – June 2023

Figure 36 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 3.

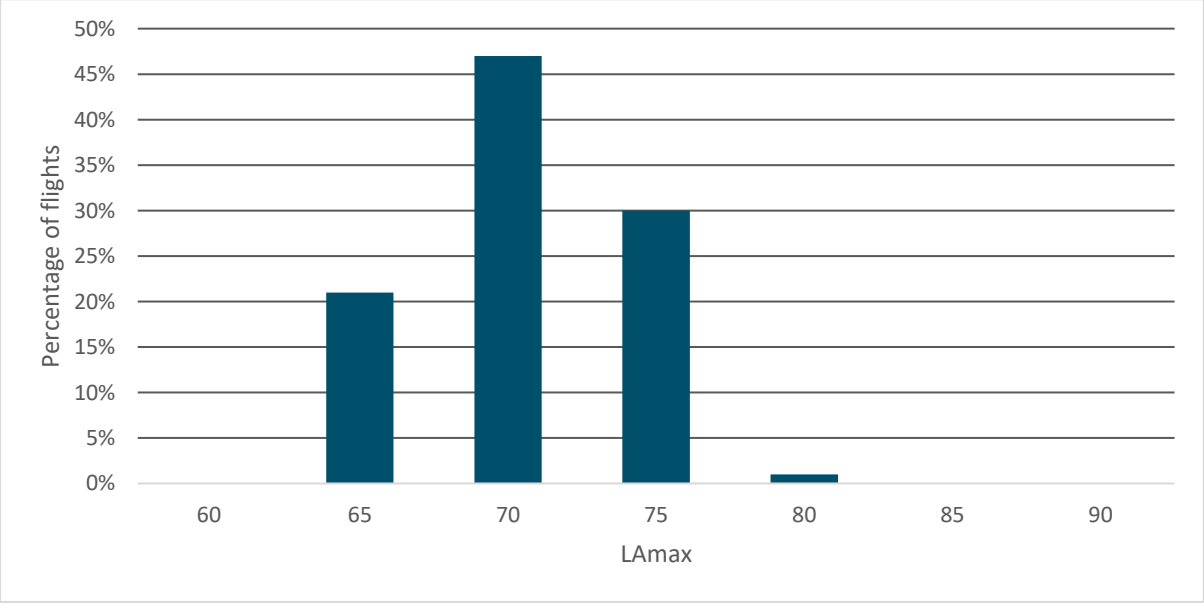

Figure 42: LAmax levels distribution for NMT 3, January – June 2023

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
B742	90.4	1
C17	79.7	6
P180	79.2	2
E121	78.1	2
A310	76.7	1
32Q	76.1	2
A332	75.8	165
A333	75.8	1398
A350	75.4	1
B753	75.3	6

Table 7: LAmax by aircraft types correlated to NMT 3, January - June 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 1st up to and including June 30th, 2023 are presented in this section.

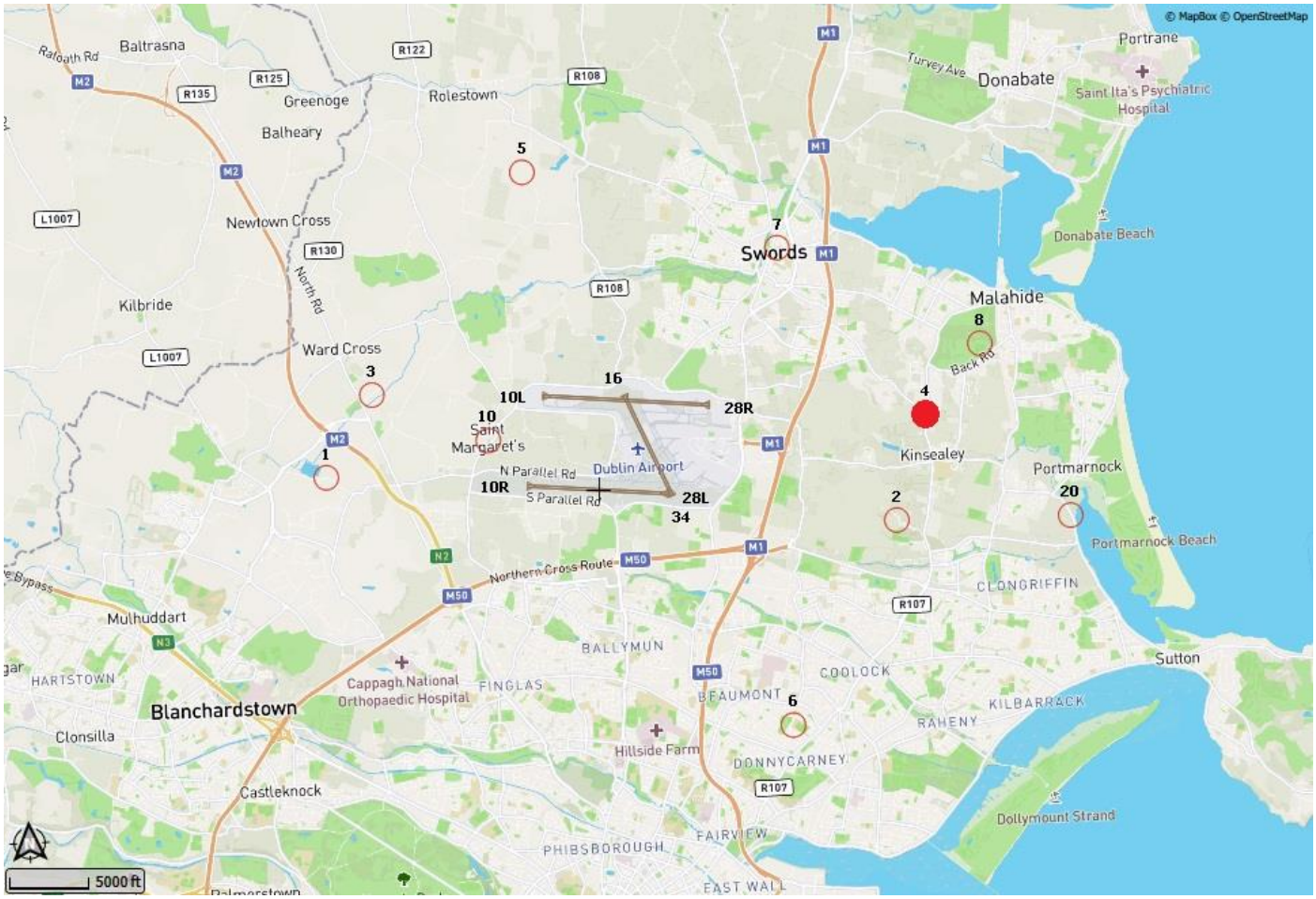

Figure 43: Noise Monitoring Terminal Feltrim Location

Noise Events

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

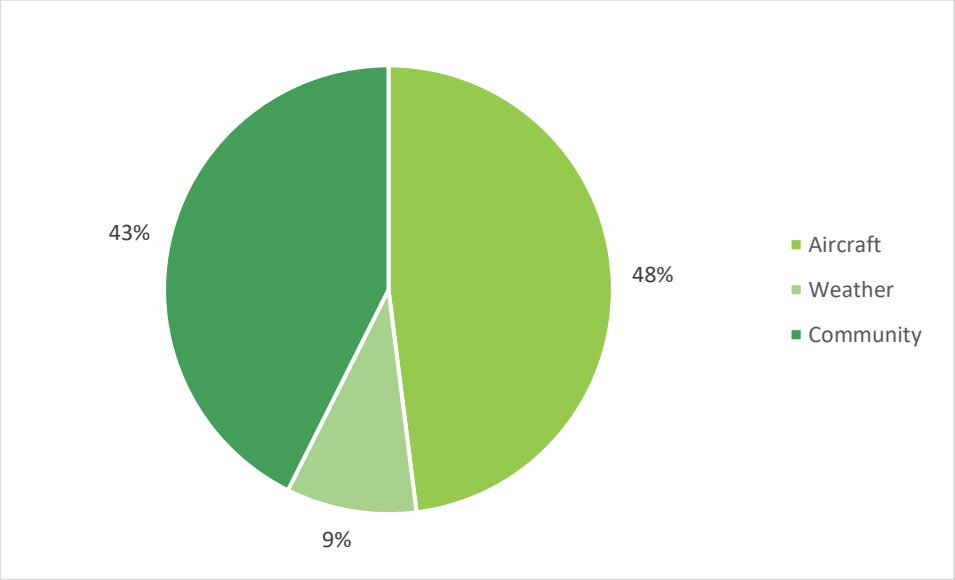

Figure 44: NMT 4 Noise Event Types

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.

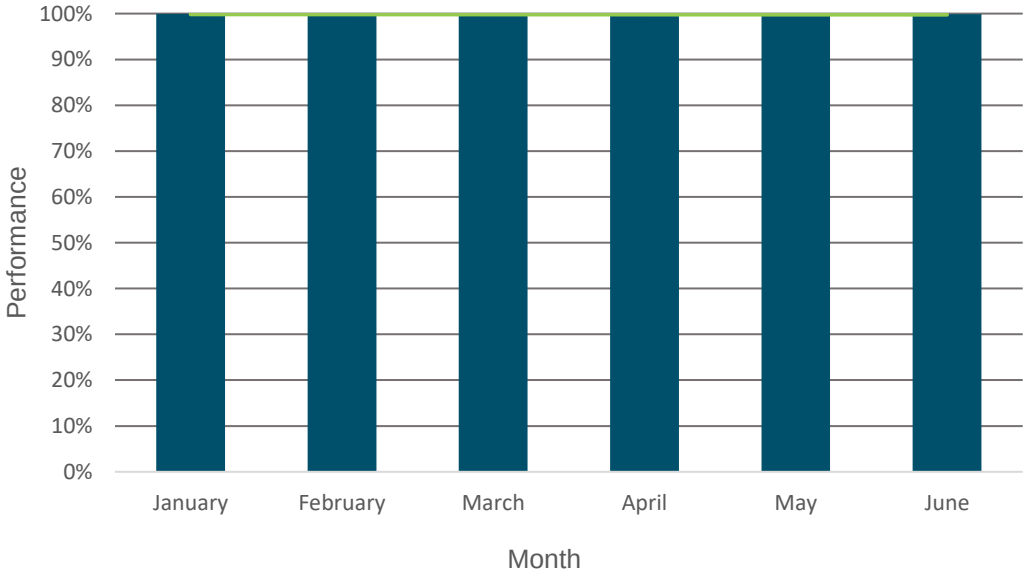

Figure 45: Operational status of NMT 4, January – June 2023

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.

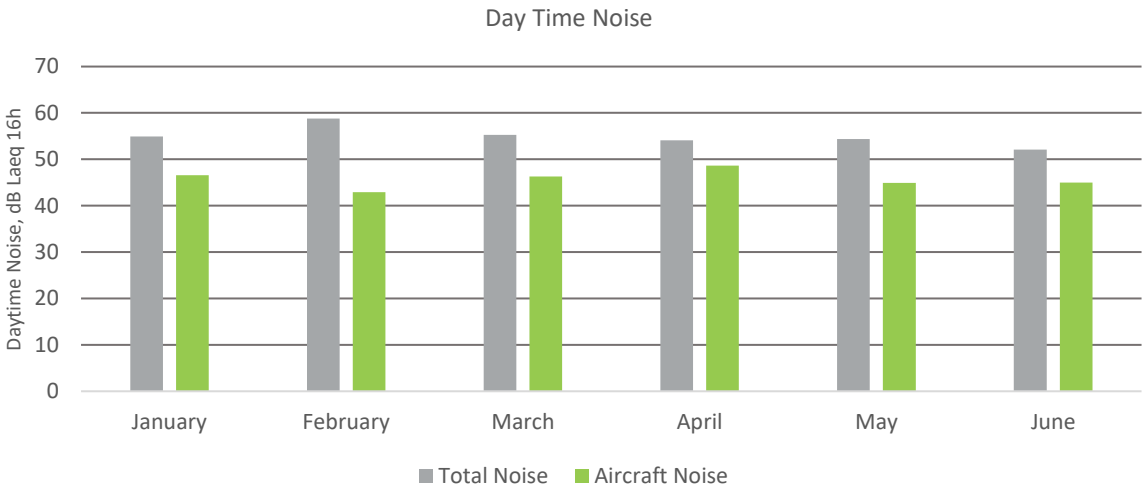

Figure 46: Averaged daytime noise levels for NMT 4, January – June 2022

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.

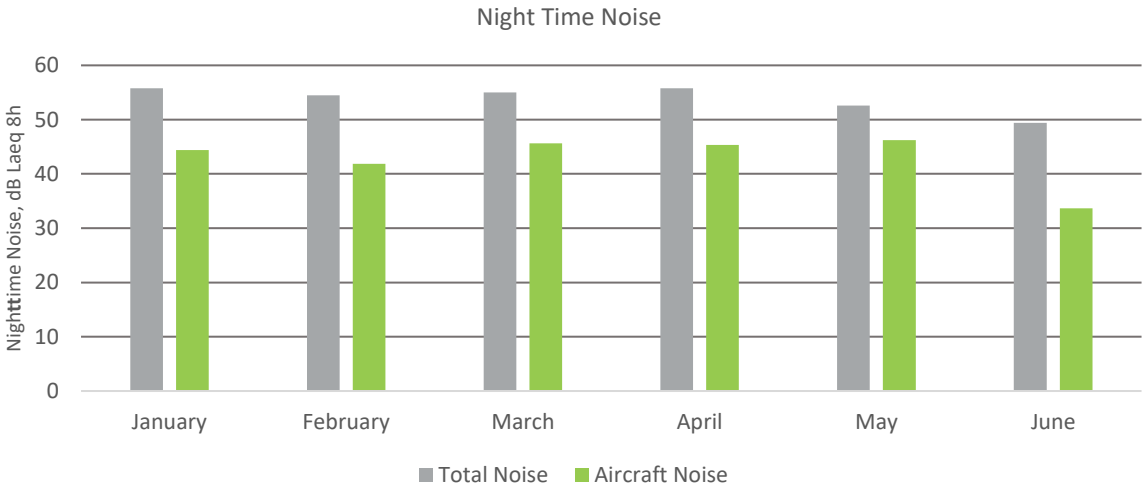

Figure 47: Averaged nighttime noise levels for NMT 4, January – June 2023

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

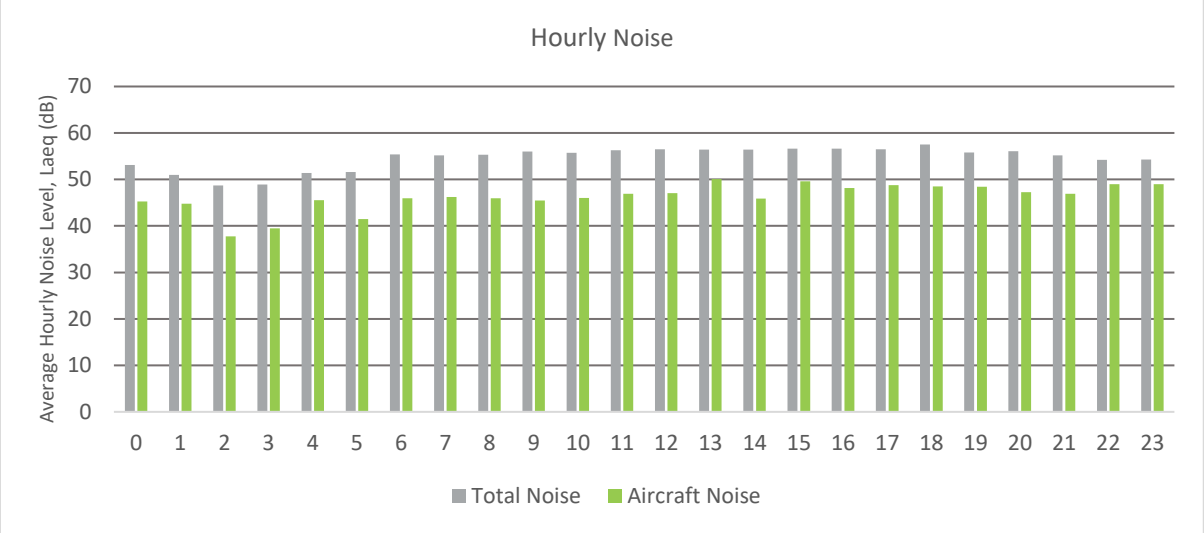

Figure 48: Averaged hourly noise levels for NMT 4, January – June 2023

Figure 43 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 4.

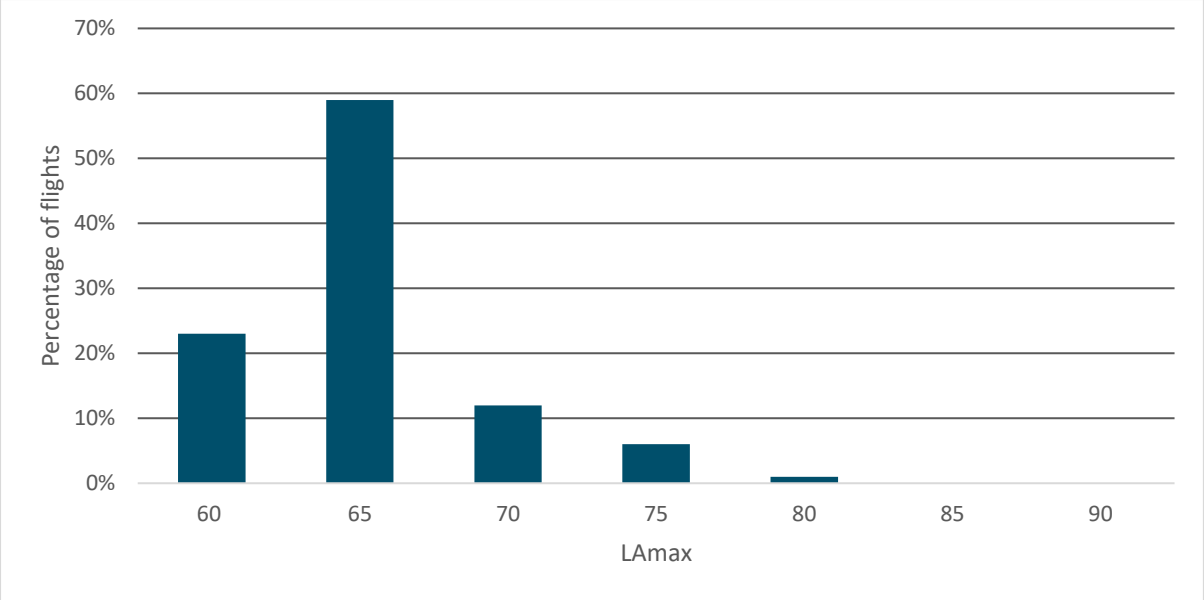

Figure 49: LAmax levels distribution for NMT 4, January – June 2023

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
B742	83.1	1
C525	77.8	1
BCS1	75.6	2
BE40	75.6	1
LJ45	75.3	3
D328	74.7	1
LJ60	72.9	1
F100	72.2	1
E55P	71.8	1
SW4	71.4	1

Table 8: LAmax by aircraft types correlated to NMT 4, January - June 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 1st up to and including June 30th, 2023 are presented in this section.

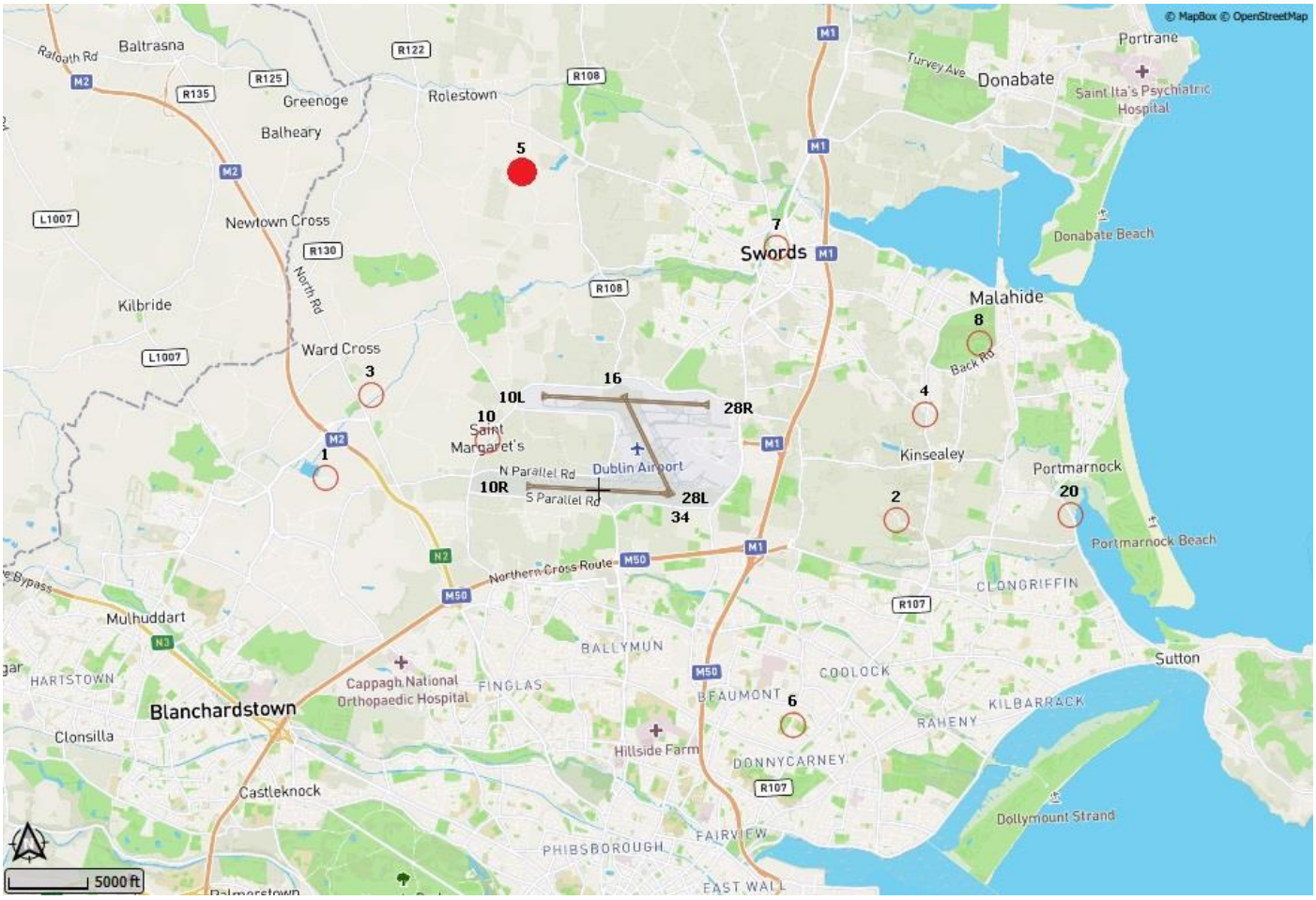

Figure 50: Noise Monitoring Terminal Balcultry Location

Noise Events

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

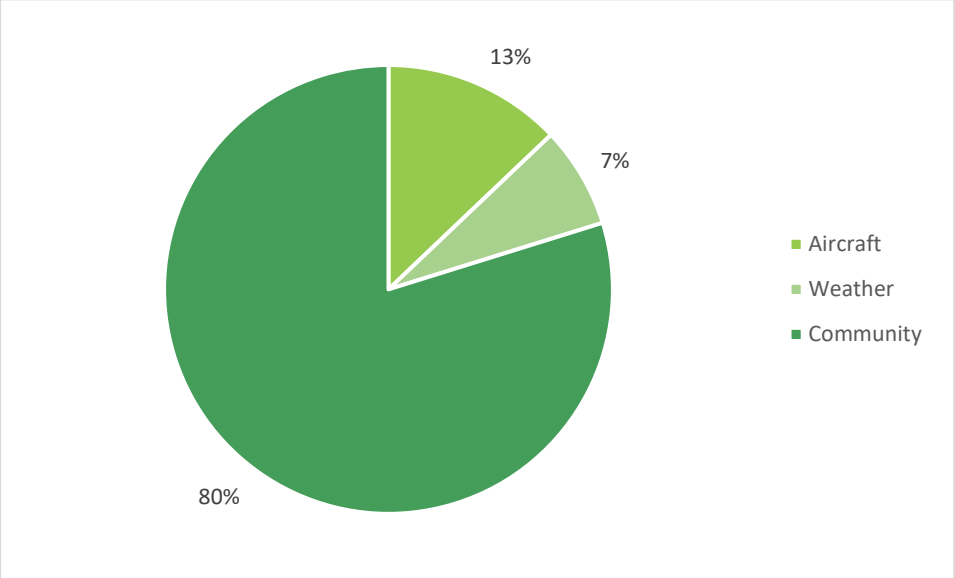

Figure 51: NMT 5 Noise Event Types

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.

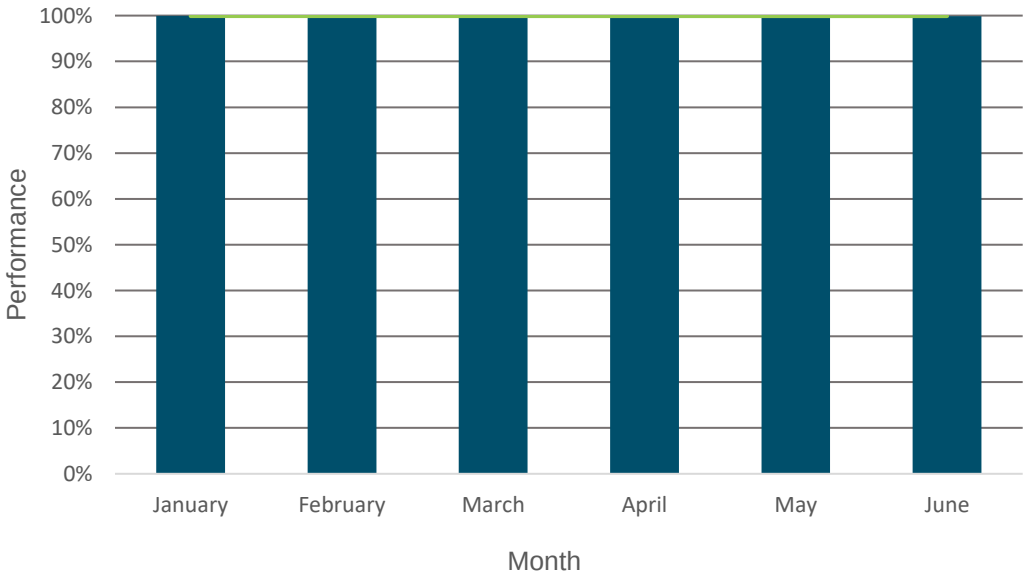

Figure 52: Operational status of NMT 5, January – June 2023

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.

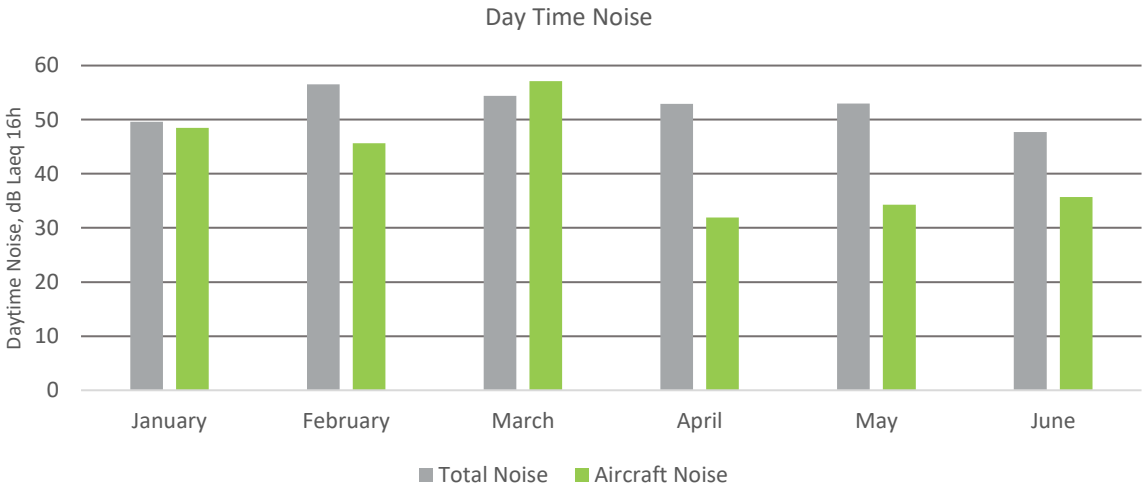

Figure 53: Averaged daytime noise levels for NMT 5, January – June 2023

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.

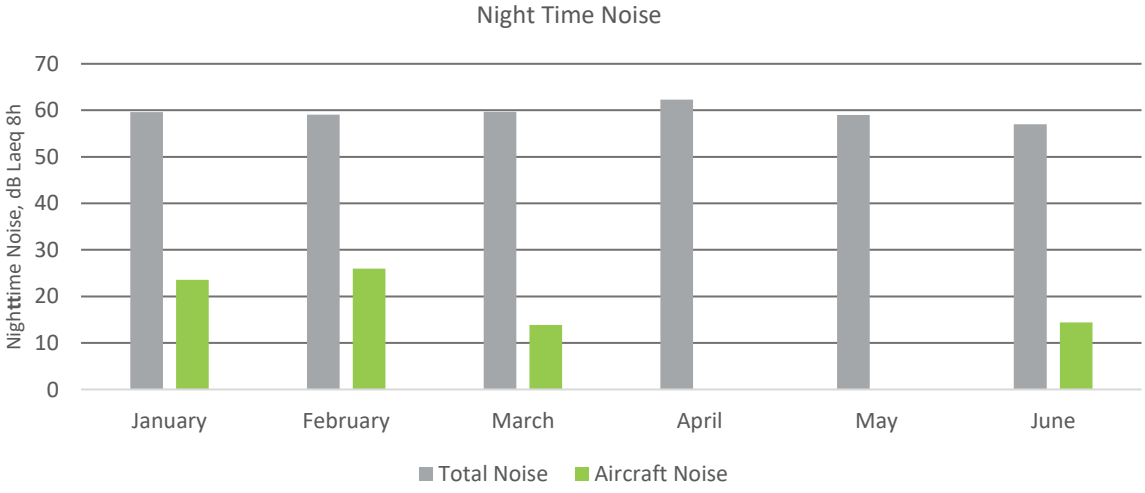

Figure 54: Averaged nighttime noise levels for NMT 5, January – June 2023

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

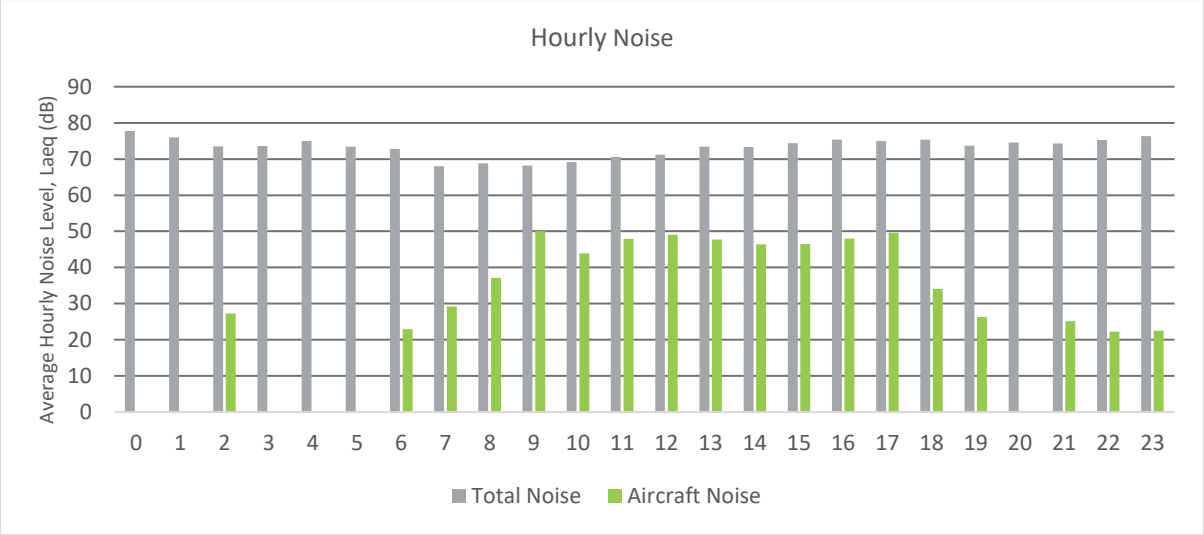

Figure 55: Averaged hourly noise levels for NMT 5, January – June 2023

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

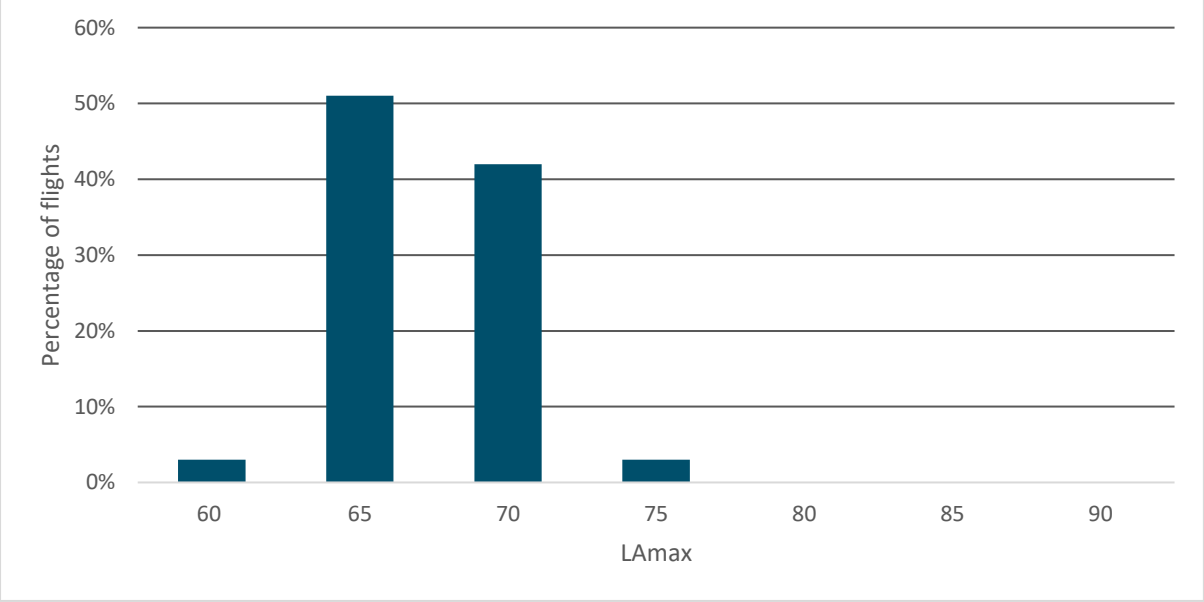

Figure 56: LAmax levels distribution for NMT 5, January – June 2023

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
FA7X	78.3	1
7M8	75.8	2
EVSS	74.5	17
C17	72.3	4
B772	72.2	1
A333	72	171
B763	72	5
E190	71.9	190
BCS3	71.6	11

Table 9: LAmax by aircraft types correlated to NMT 5, January - June 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 1st up to and including June 30th, 2023 are presented in this section.

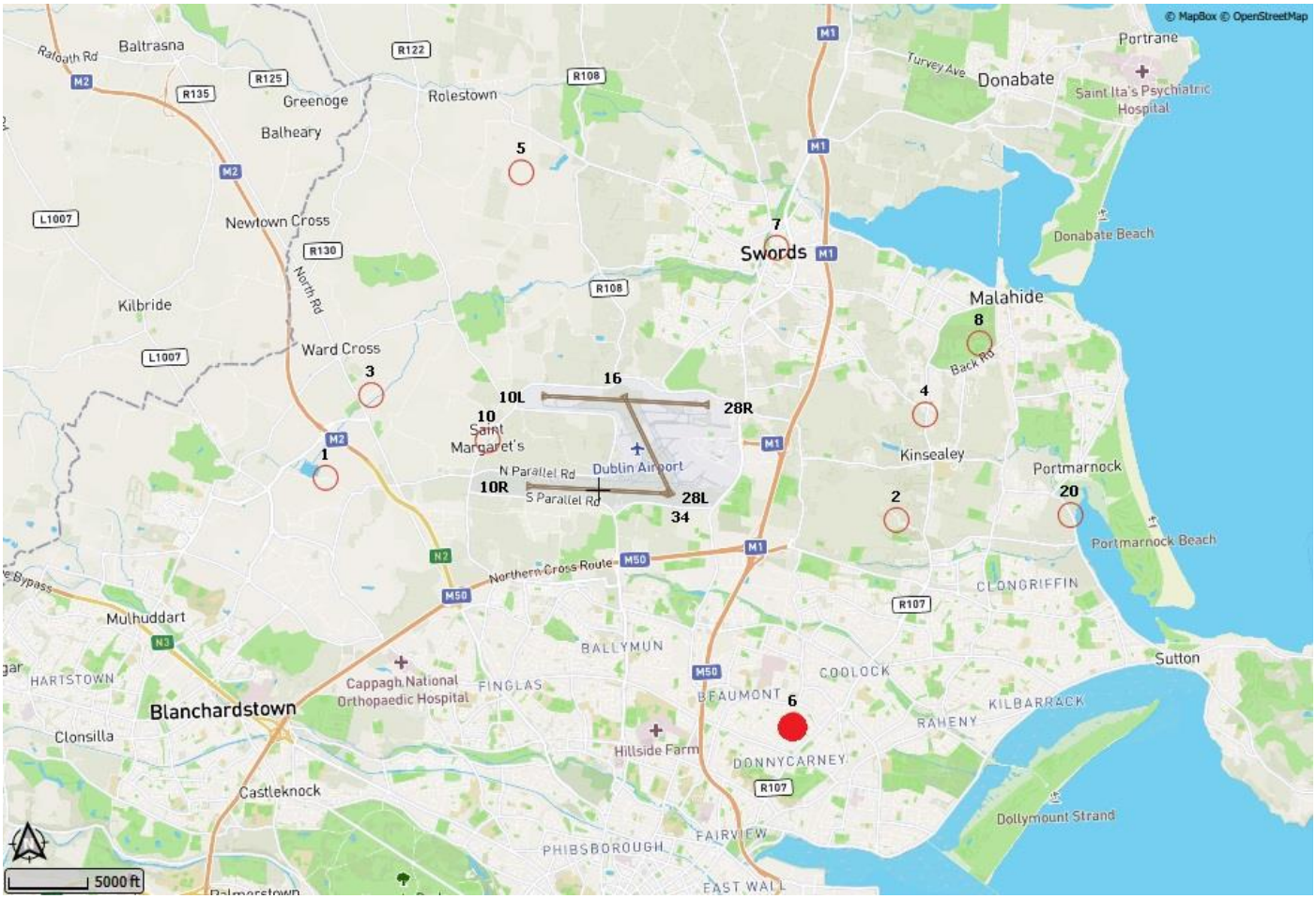

Figure 57: Noise Monitoring Terminal Artane Location

Noise Events

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

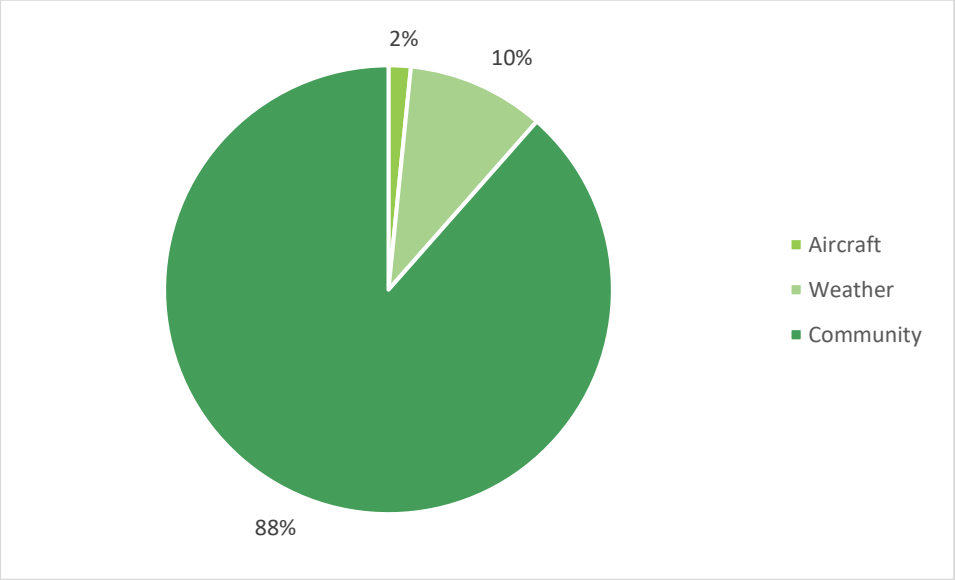

Figure 58: NMT 6 Noise Event Types

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.

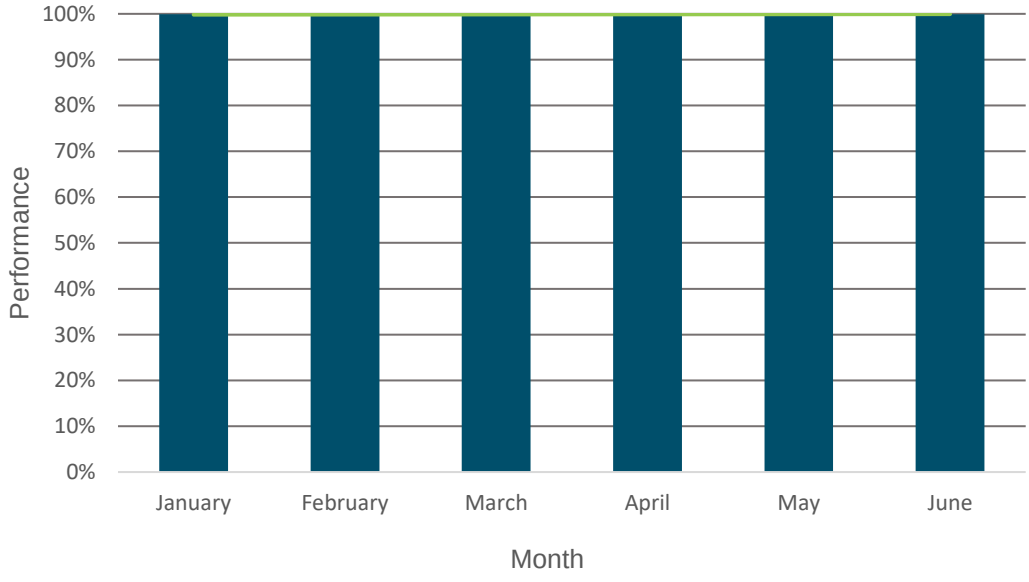

Figure 59: Operational status of NMT 6, January – June 2023

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.

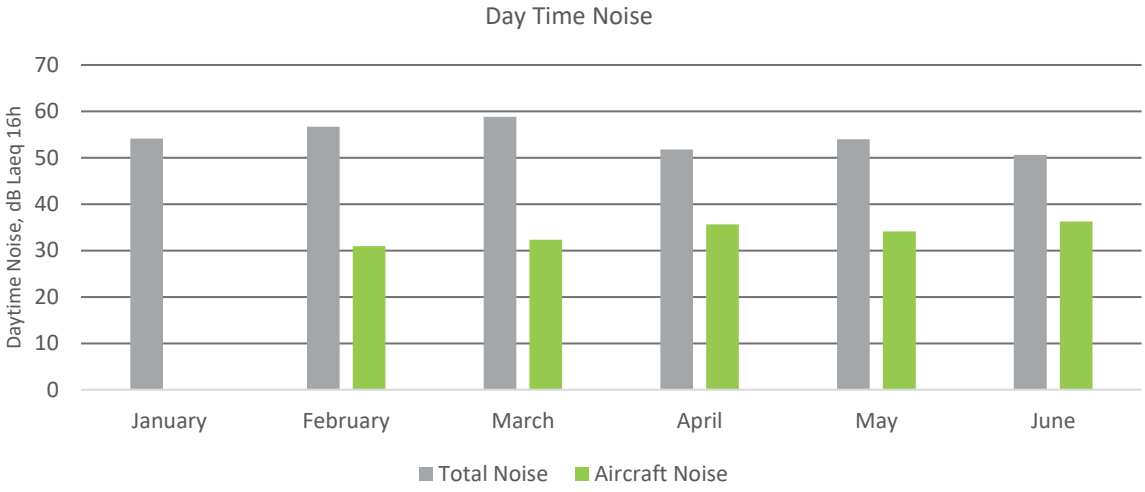

Figure 60: Averaged daytime noise levels for NMT 6, January – June 2023

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.

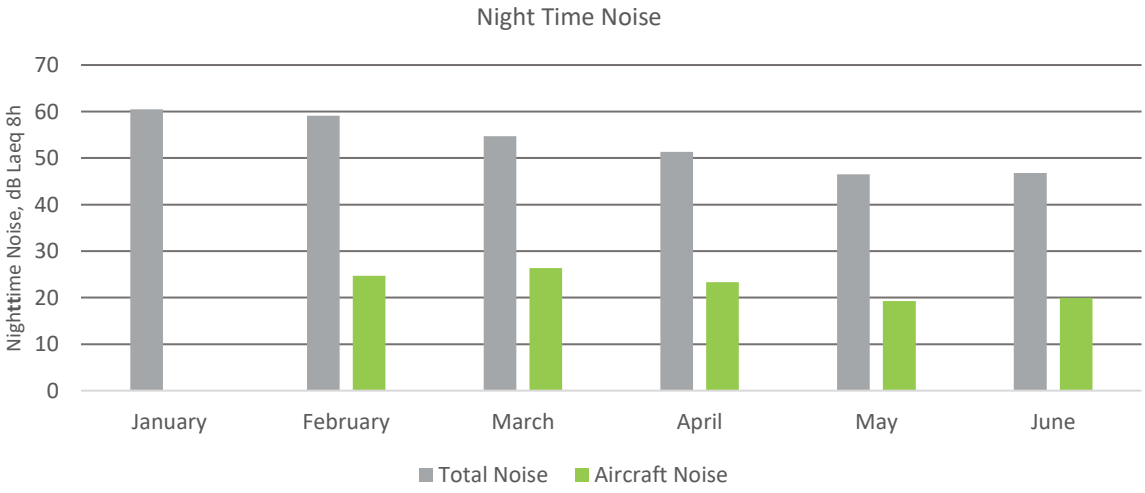

Figure 61: Averaged nighttime noise levels for NMT 6, January – June 2023

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

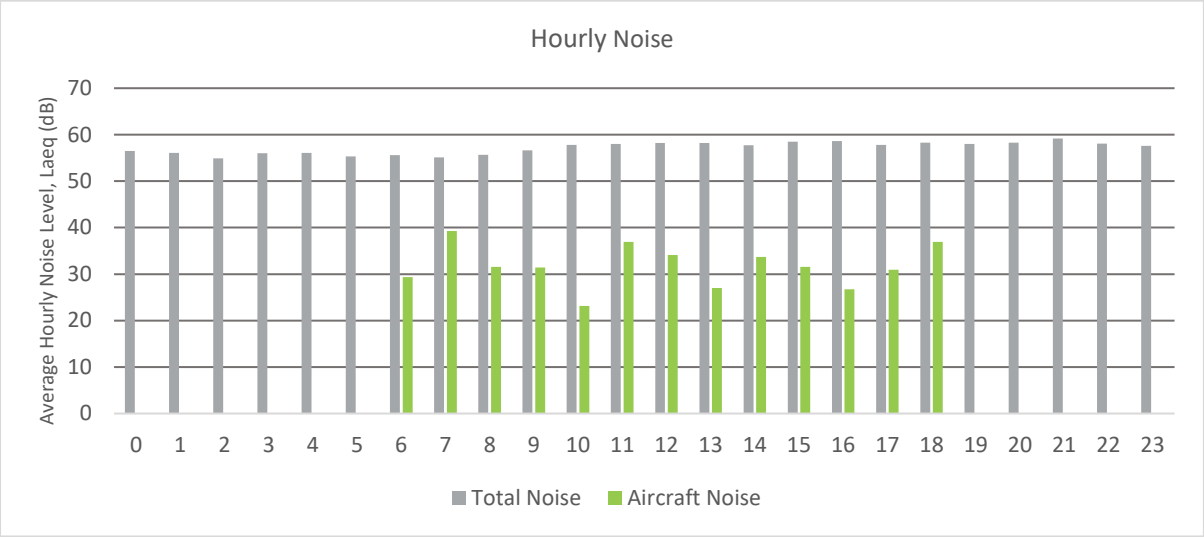

Figure 62: Averaged hourly noise levels for NMT 6, January – June 2023

Figure 57 shows the LAmax distribution for aircraft noise for the first quarter of 2023 for NMT 6

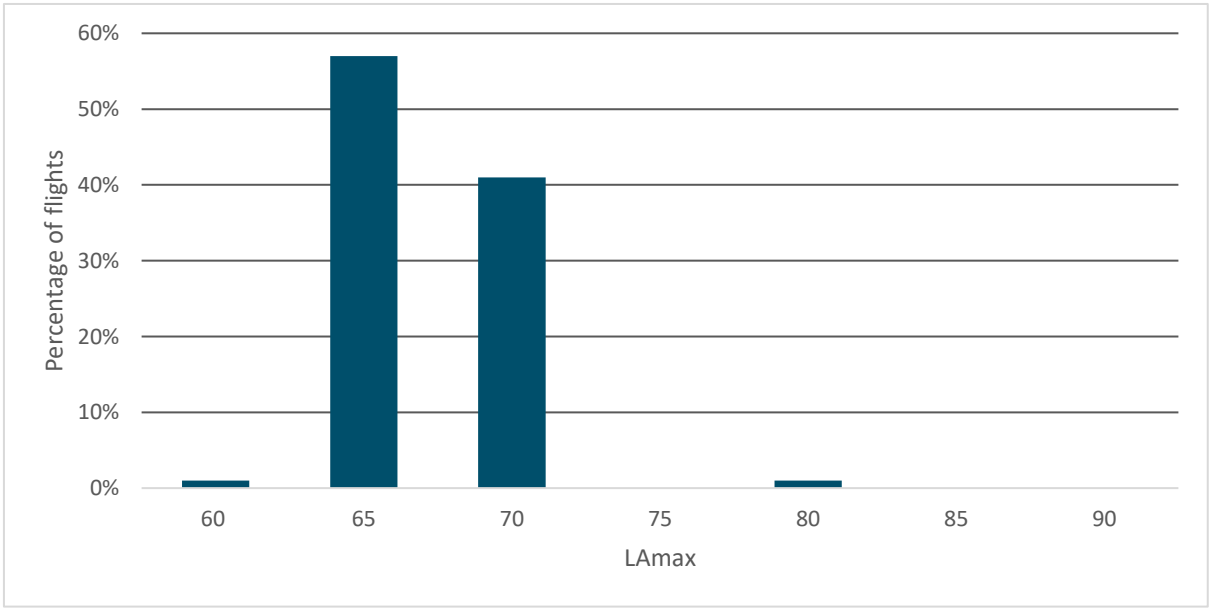

Figure 63: LAmax levels distribution for NMT 6, January – June 2023

Table 10 shows the top 8 loudest correlated aircraft types from the total count of correlated noise events to NMT 6.

Aircraft Type	Max dB	Total Count
E121	72.7	1
EVSS	69.9	10
AT73	69.7	280
AT76	69	18
AT75	68.8	6
AT72	68.2	5
TBM7	67.6	1
BE20	65	1

Table 10: LAmax by aircraft types correlated to NMT 6, January - June 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 1st up to and including June 30th, 2023 are presented in this section.

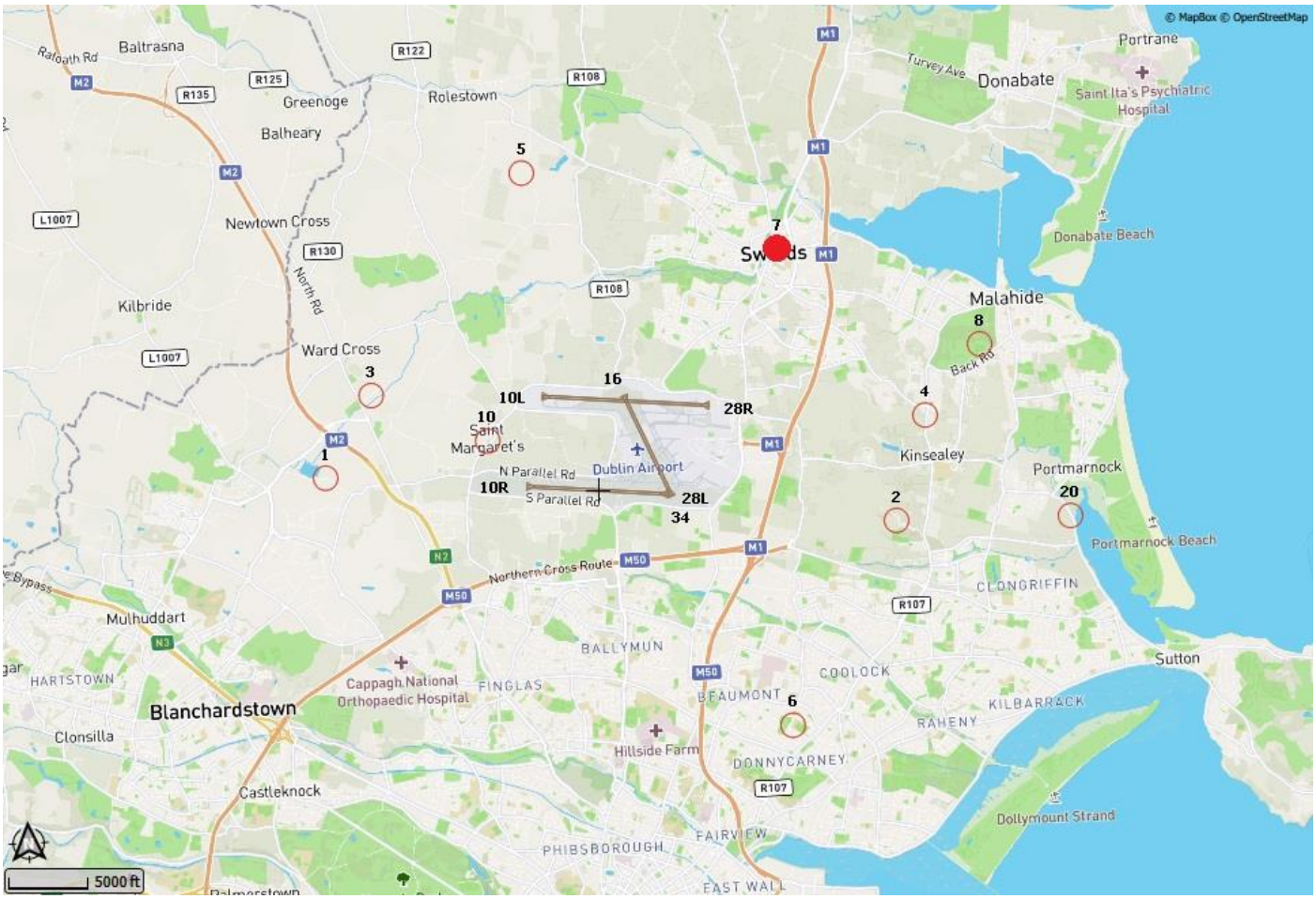

Figure 64: Noise Monitoring Terminal Coast Road Location

Noise Events

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

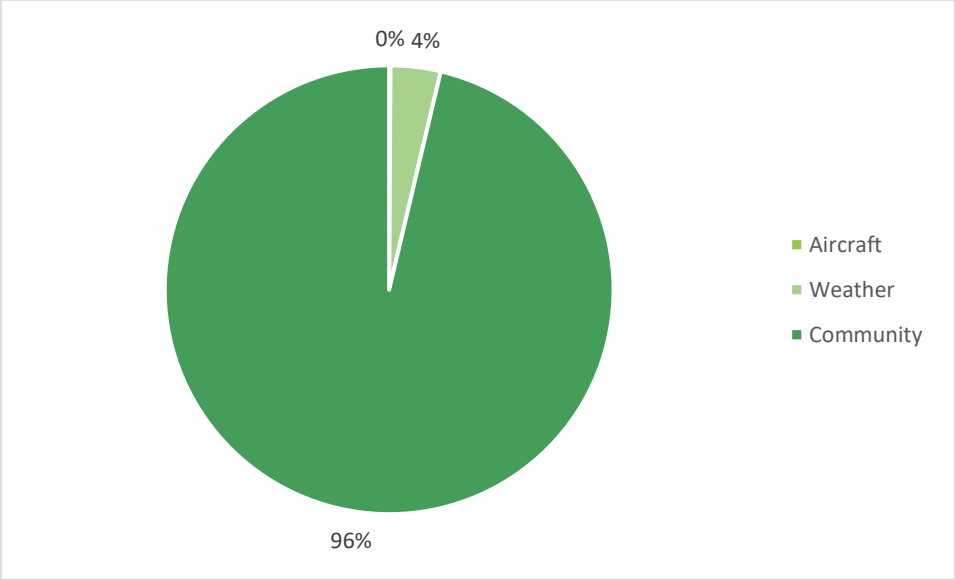

Figure 65: NMT 7 Noise Event Types

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.

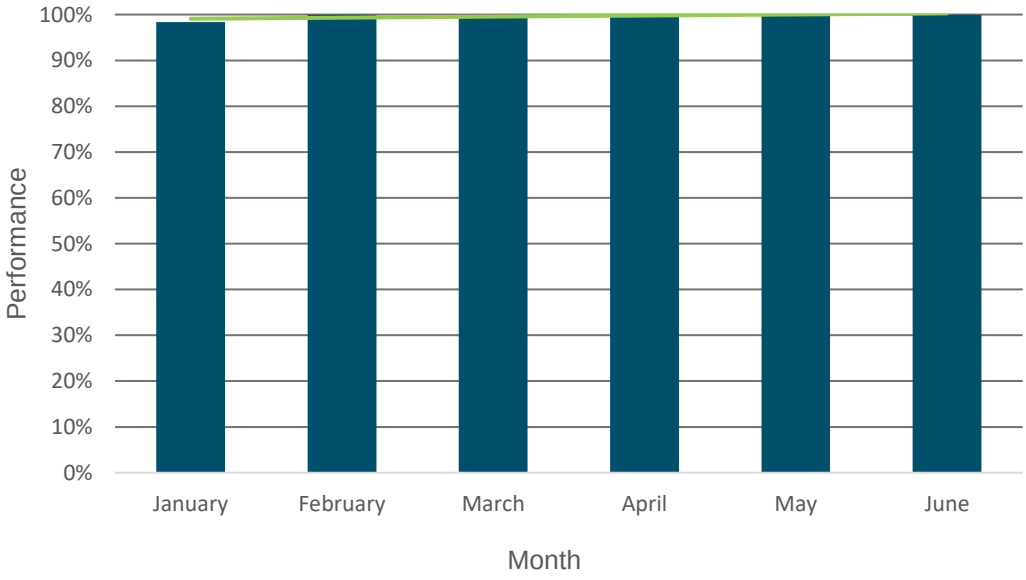

Figure 66: Operational status of NMT 7, January – June 2023

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.

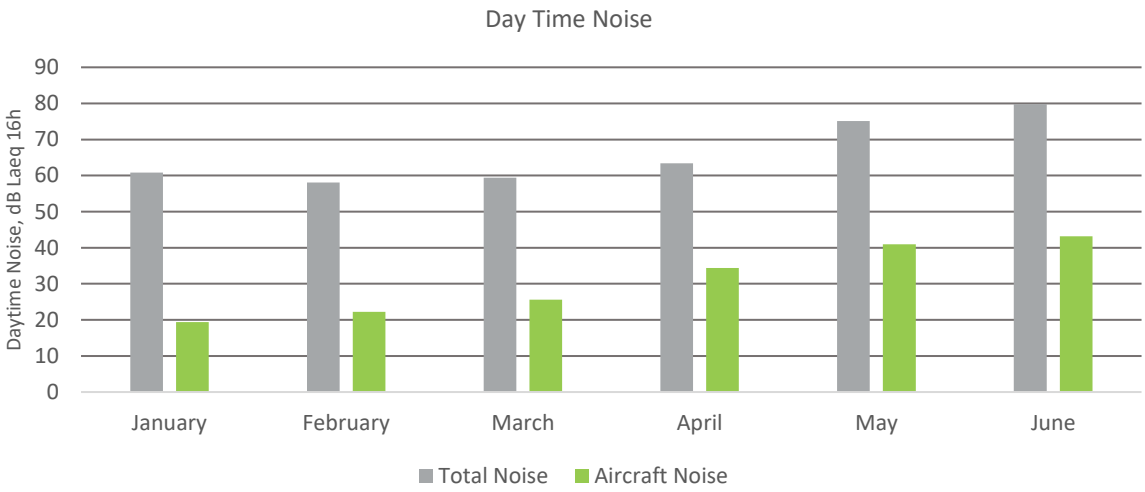

Figure 67: Averaged daytime noise levels for NMT 7, January – June 2023

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.

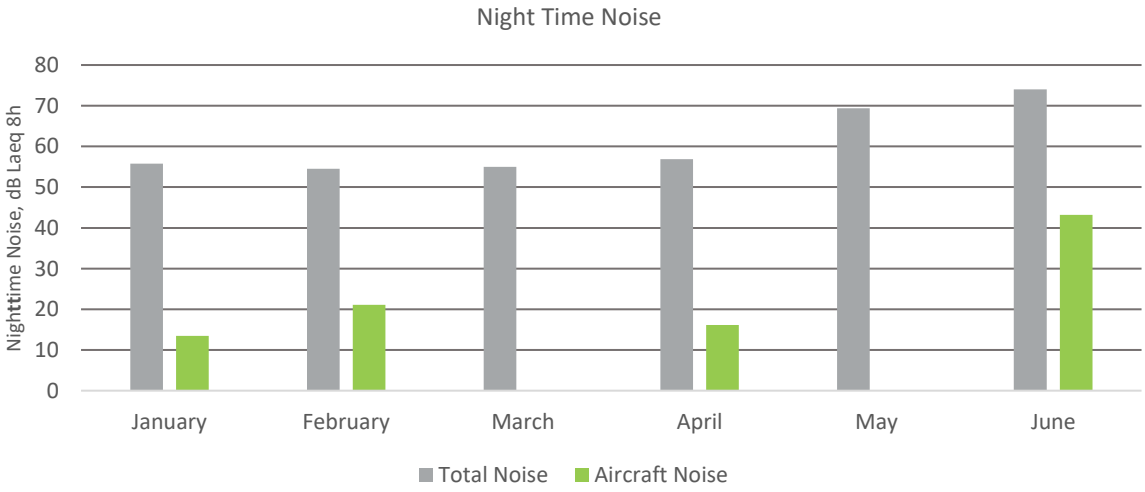

Figure 68: Averaged nighttime noise levels for NMT 7, January – June 2023

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

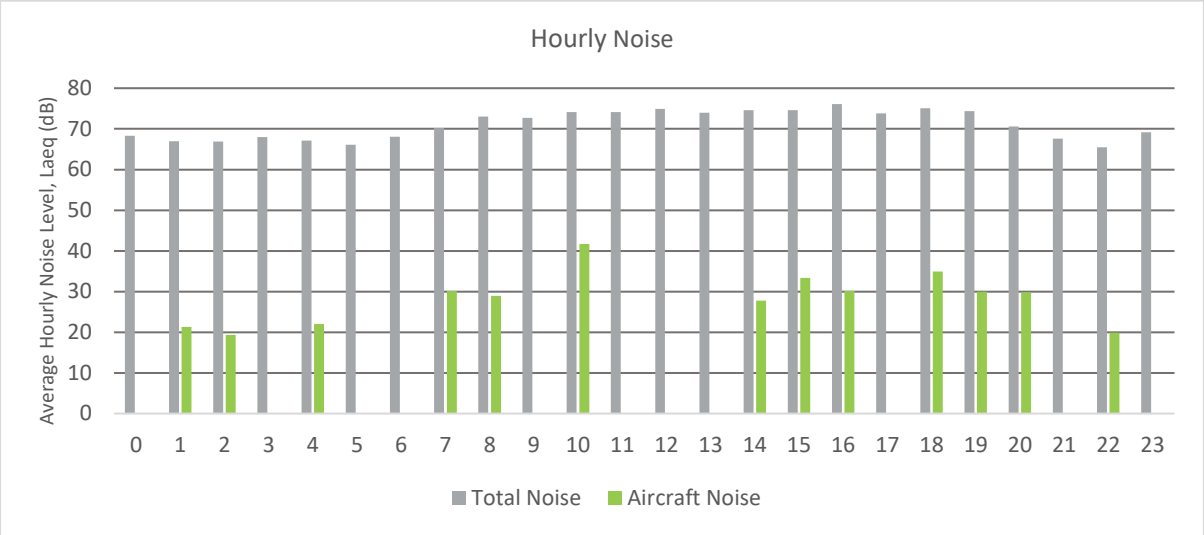

Figure 69: Averaged hourly noise levels for NMT 7, January – June 2023

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

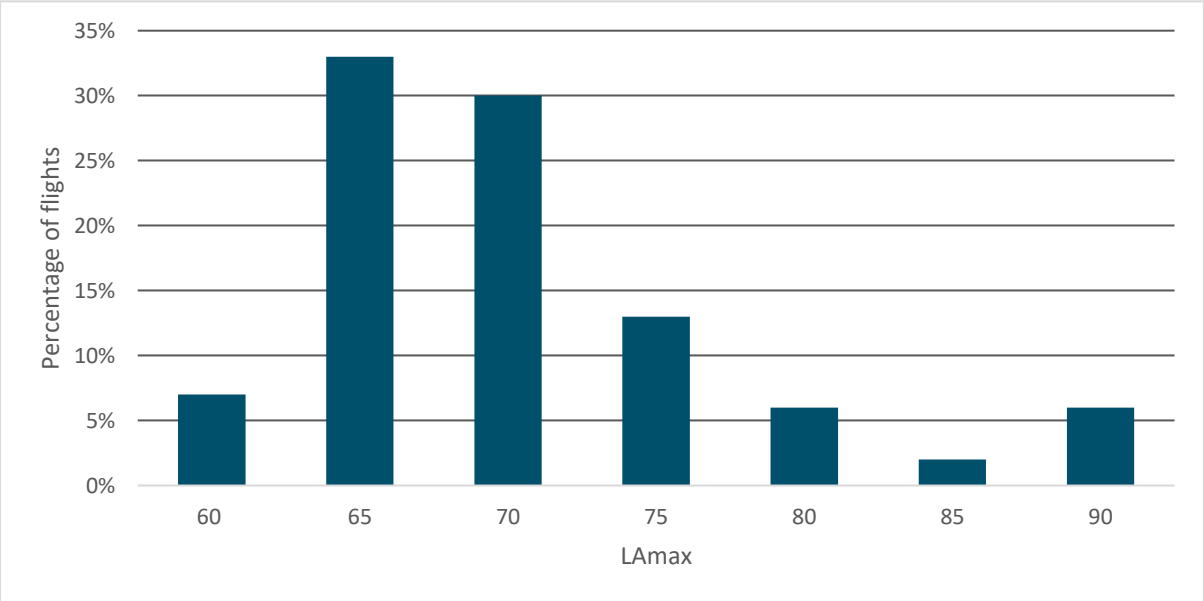

Figure 70: LAmax levels distribution for NMT 7, January – June 2023

Table 11 shows the top 8 loudest correlated aircraft types from the total count of correlated noise events to NMT 7.

Aircraft Type	Max dB	Total Count
BCS3	97	1
A321	86.4	1
SF34	79.7	2
A333	74	3
AT73	73.1	32
F406	72.5	6
A320	69.7	1
BCS3	97	1

Table 11: LAmax by aircraft types correlated to NMT 7, January – June 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 1st up to and including June 30th, 2023 are presented in this section.

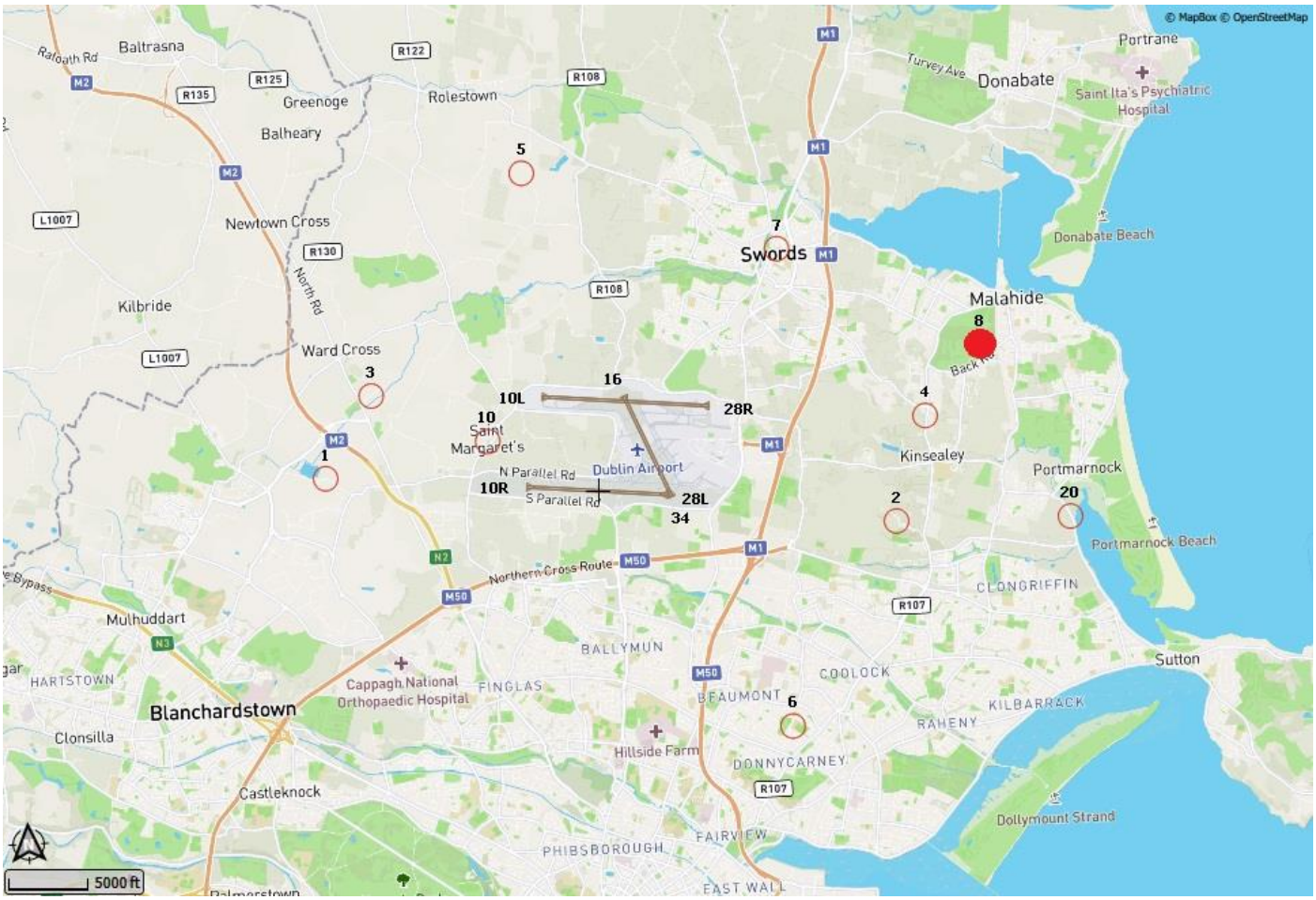

Figure 71: Noise Monitoring Terminal Coast Road Location

Noise Events

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

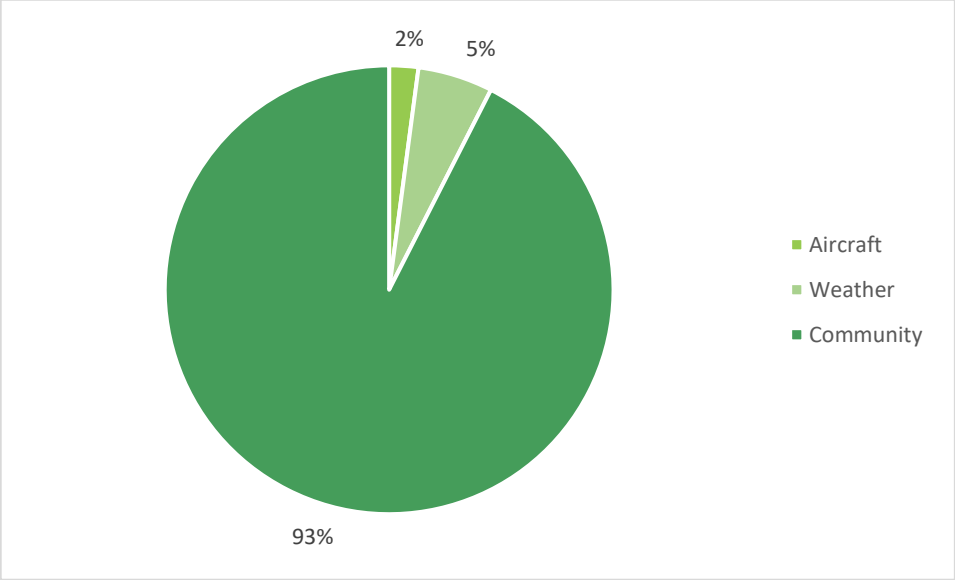

Figure 72: NMT 8 Noise Event Types

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.

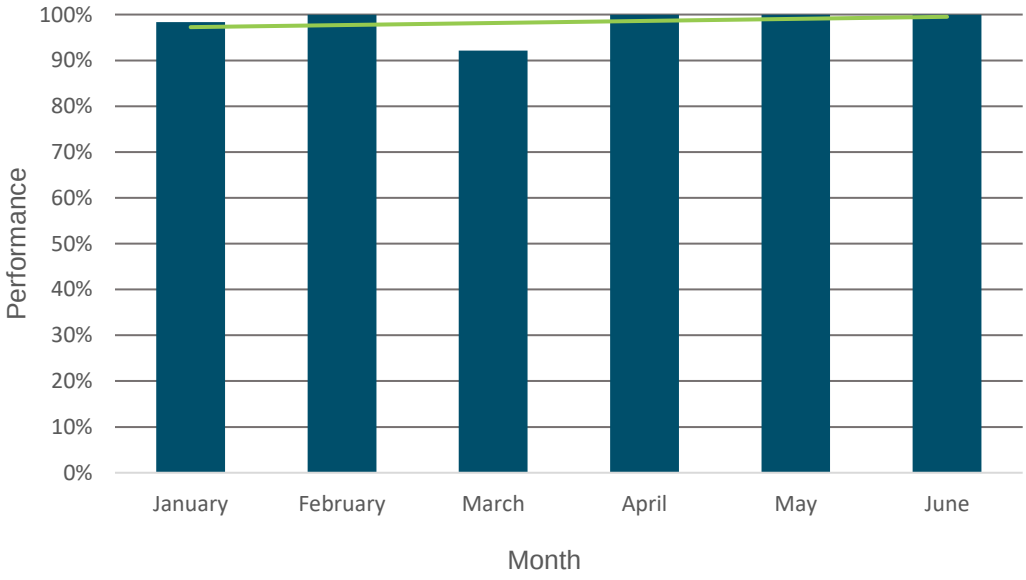

Figure 73: Operational status of NMT 8, January – June 2023

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.

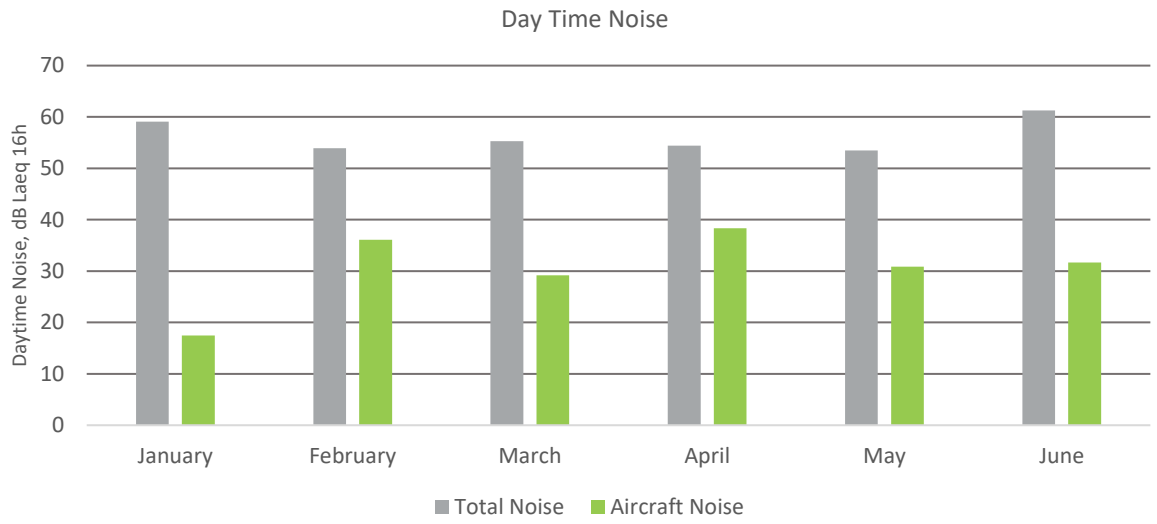

Figure 74: Averaged daytime noise levels for NMT 8, January – June 2023

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.

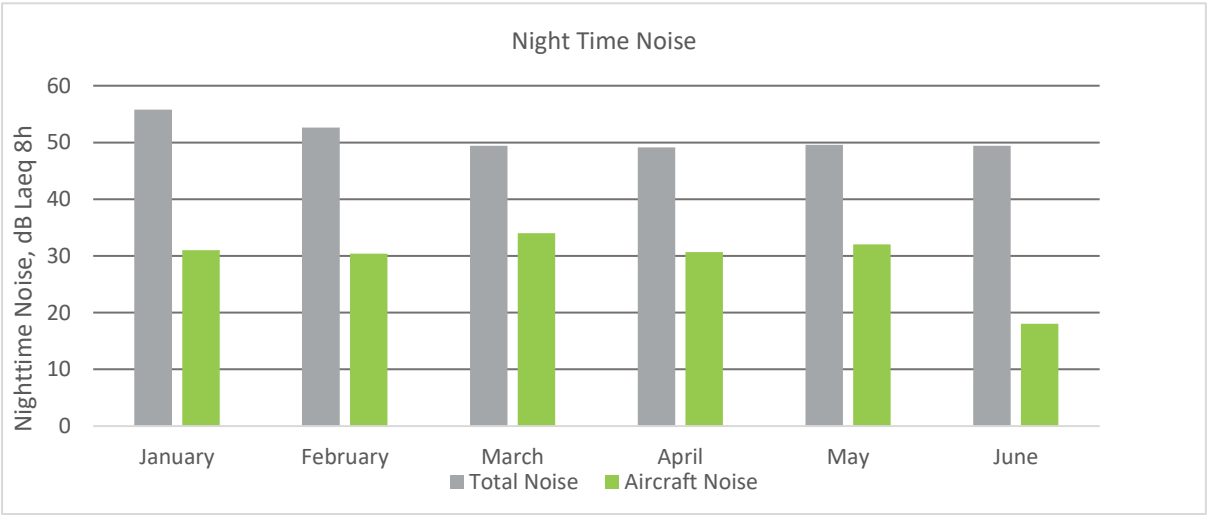

Figure 75: Averaged nighttime noise levels for NMT 8, January – June 2023

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

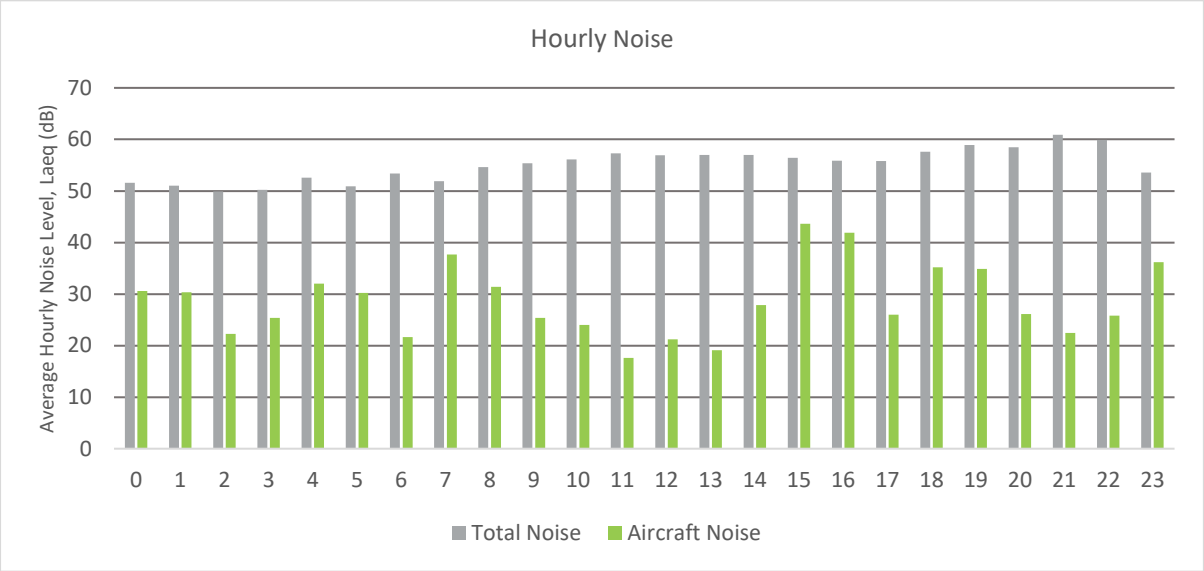

Figure 76: Averaged hourly noise levels for NMT 8, January – June 2023

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

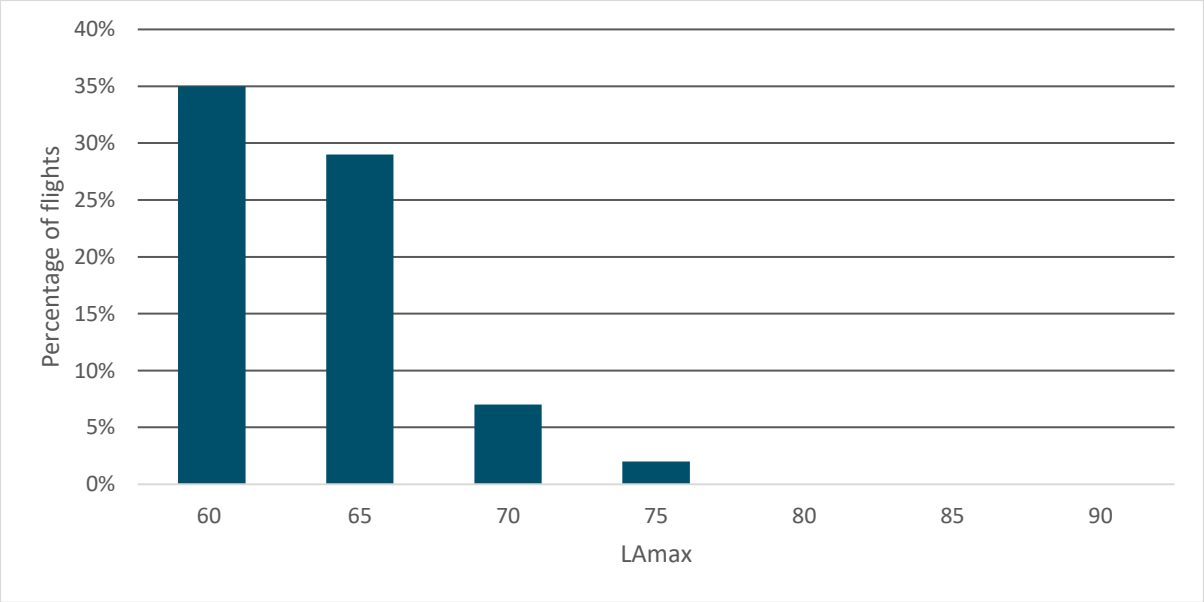

Figure 77: LAmax levels distribution for NMT 8, January – June 2023

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
B763	74.1	1
E190	71.3	4
A332	70.7	2
GLEX	70.1	1
A20N	67.4	2
E295	67	1
F406	66.5	4
7M8	66.4	4
AT75	66.3	1
B742	66.2	1

Table 12: LAmax by aircraft types correlated to NMT 8, January – June 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 1st up to and including June 30th, 2023 are presented in this section.

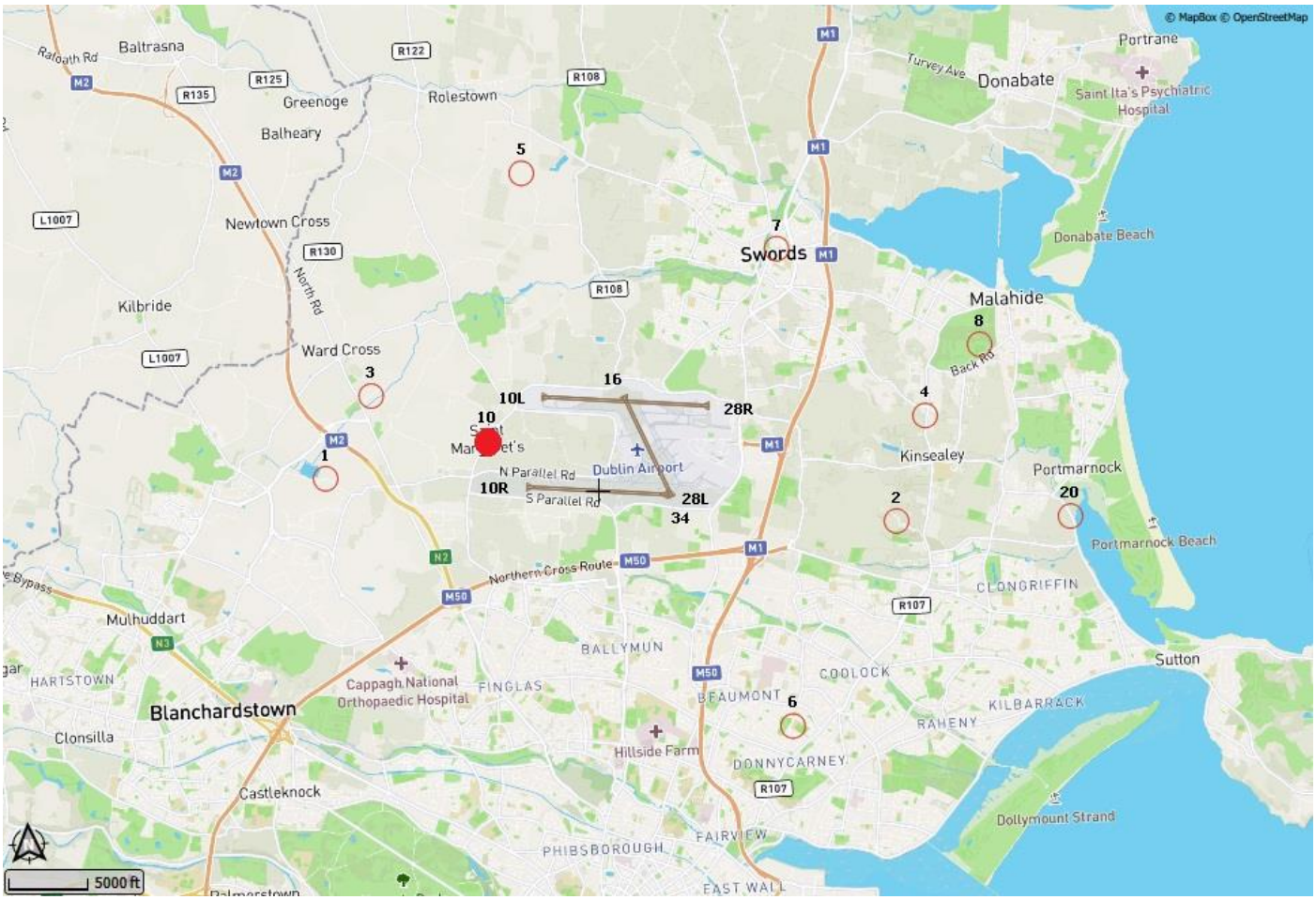

Figure 78: Noise Monitoring Terminal Coast Road Location

Noise Events

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

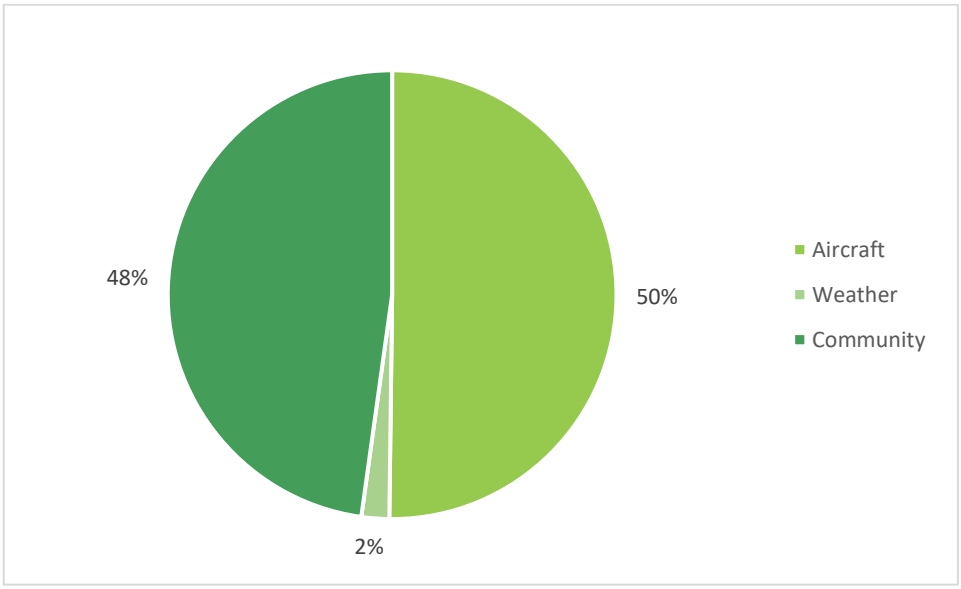

Figure 79: NMT 8 Noise Event Types

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.

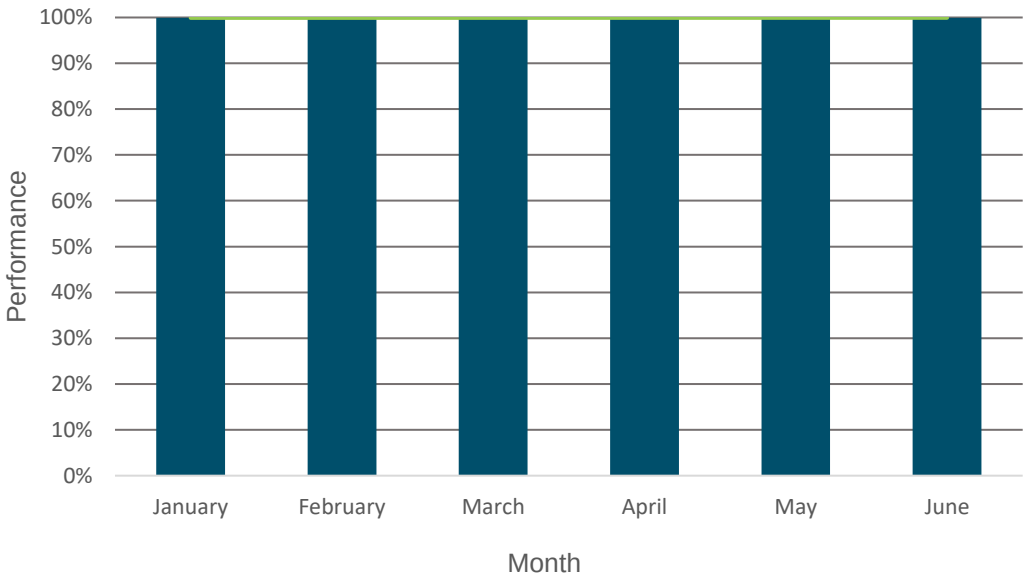

Figure 80: Operational status of NMT 10, January – June 2023

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.

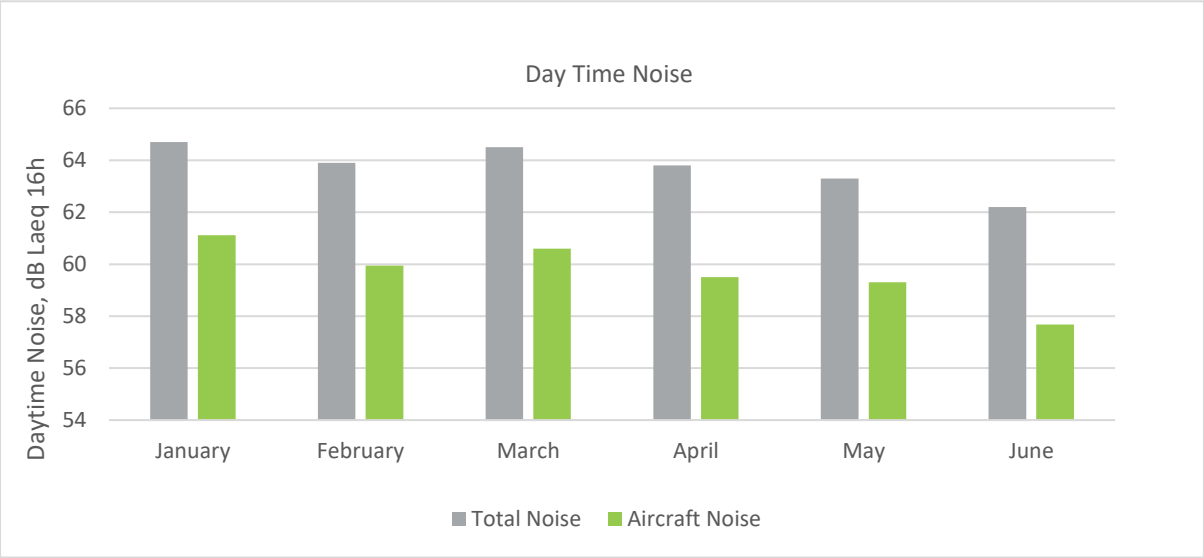

Figure 81: Averaged daytime noise levels for NMT 10, January – June 2023

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.

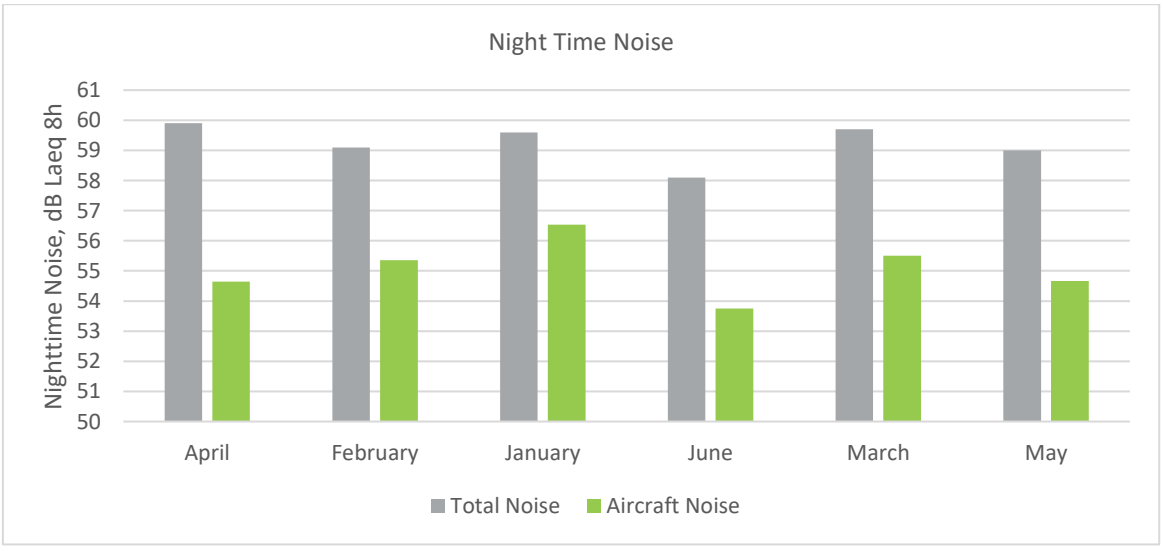

Figure 82: Averaged nighttime noise levels for NMT 10, January – June 2023

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

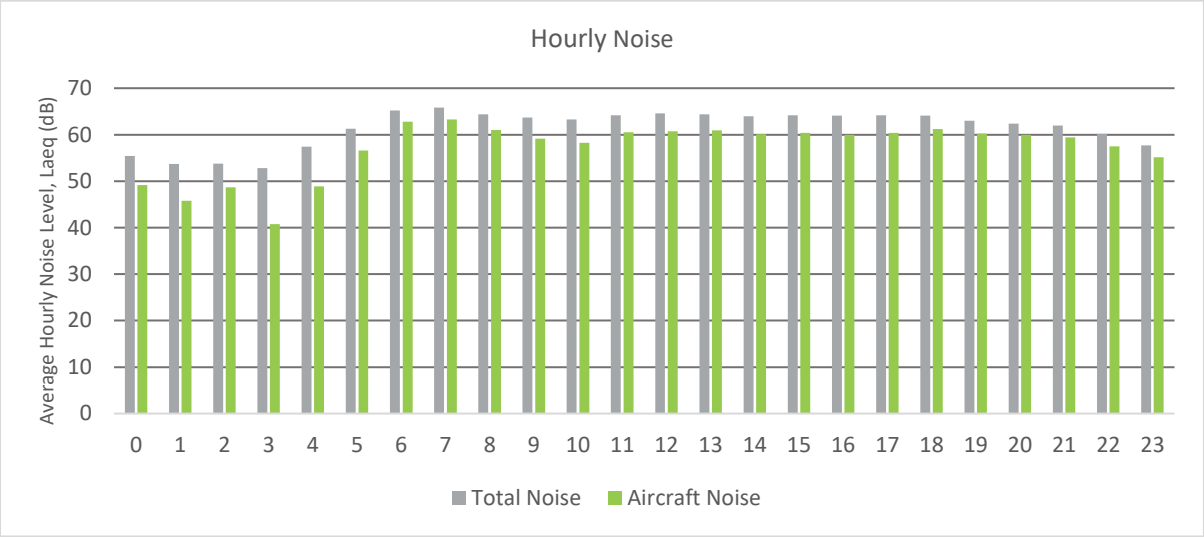

Figure 83: Averaged hourly noise levels for NMT 10, January – June 2023

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

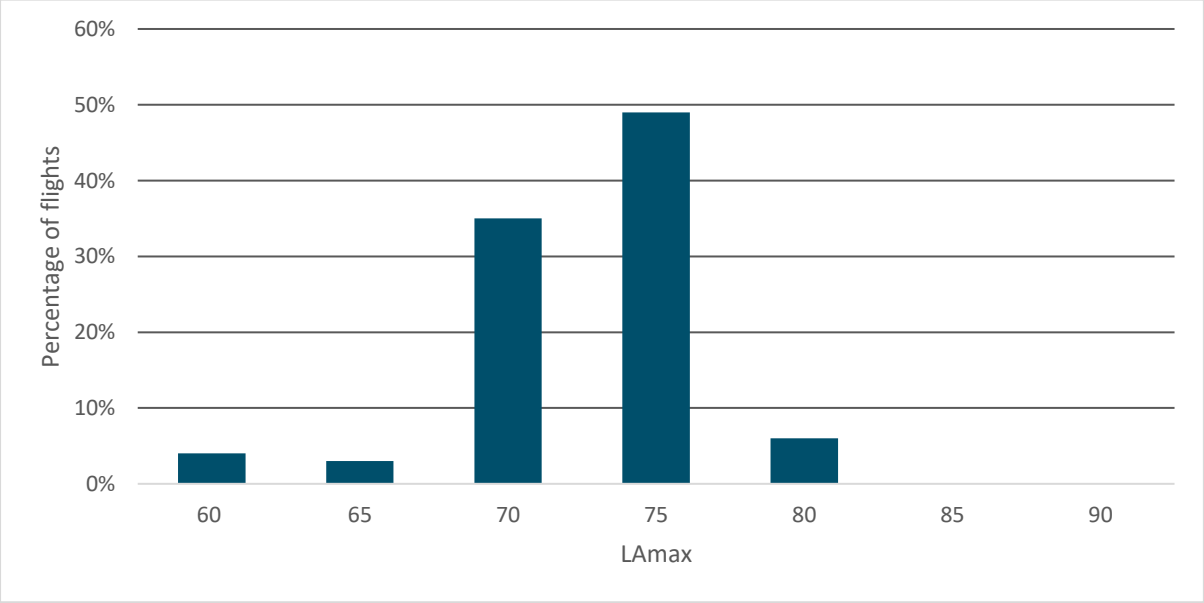

Figure 84: LAmax levels distribution for NMT 10, January – June 2023

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	80.7	258
A333	79.2	1256
A306	78.3	16
B742	78.1	1
B739	77.4	18
B77W	77.2	327
B735	76.9	1
E90	76.9	1
A332	76.8	151
C25C	76.7	1

Table 13: LAmax by aircraft types correlated to NMT 10, January – June 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 1st up to and including June 30th, 2023 are presented in this section.

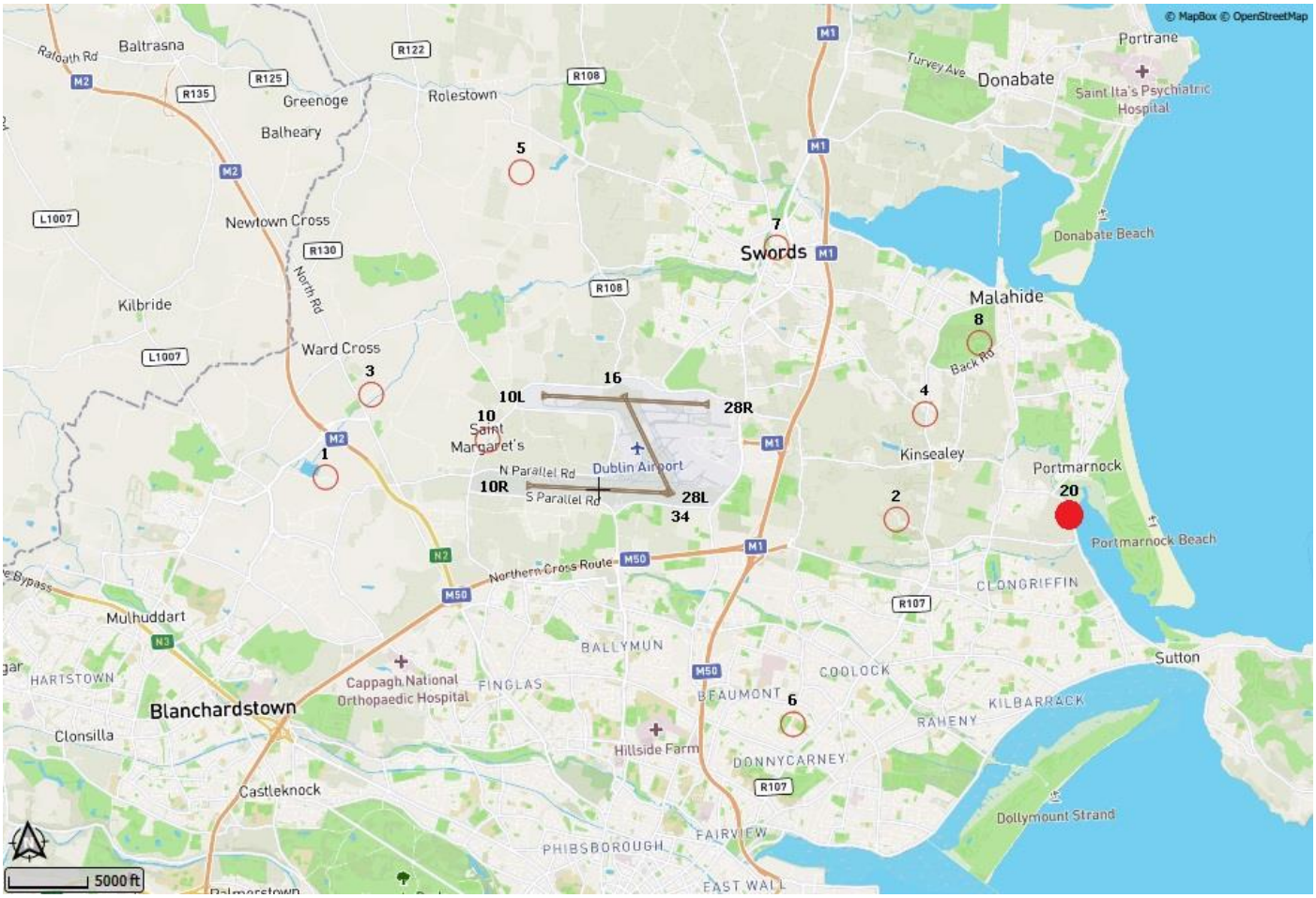

Figure 85: Noise Monitoring Terminal Coast Road Location

Noise Events

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

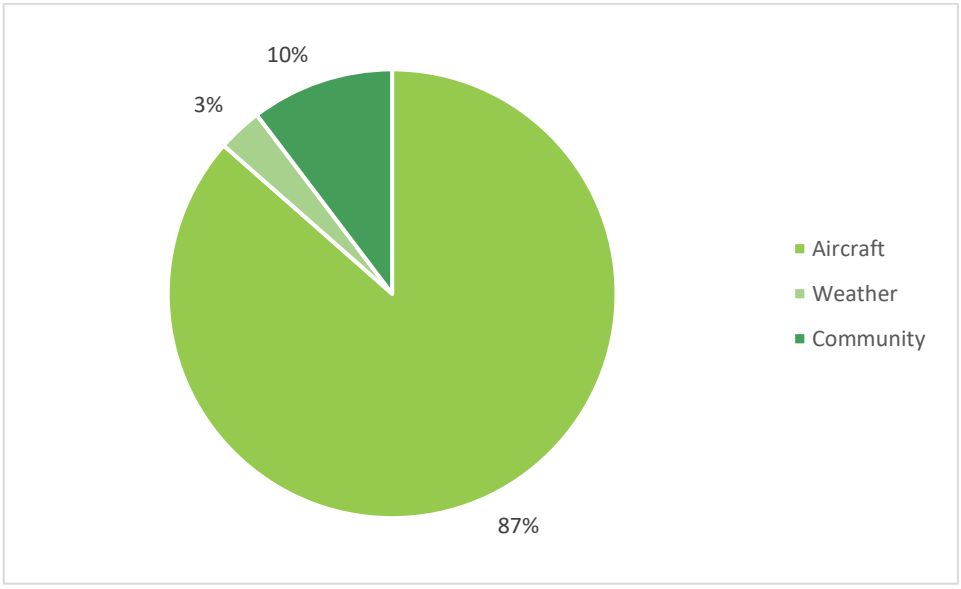

Figure 86: NMT 20 Noise Event Types

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.

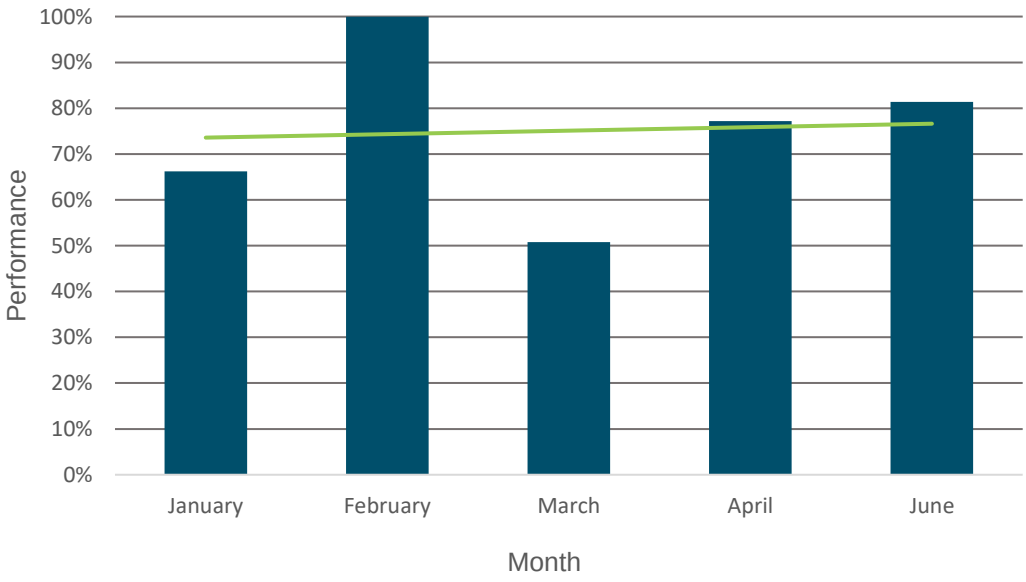

Figure 87: Operational status of NMT 20, January – June 2023

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.

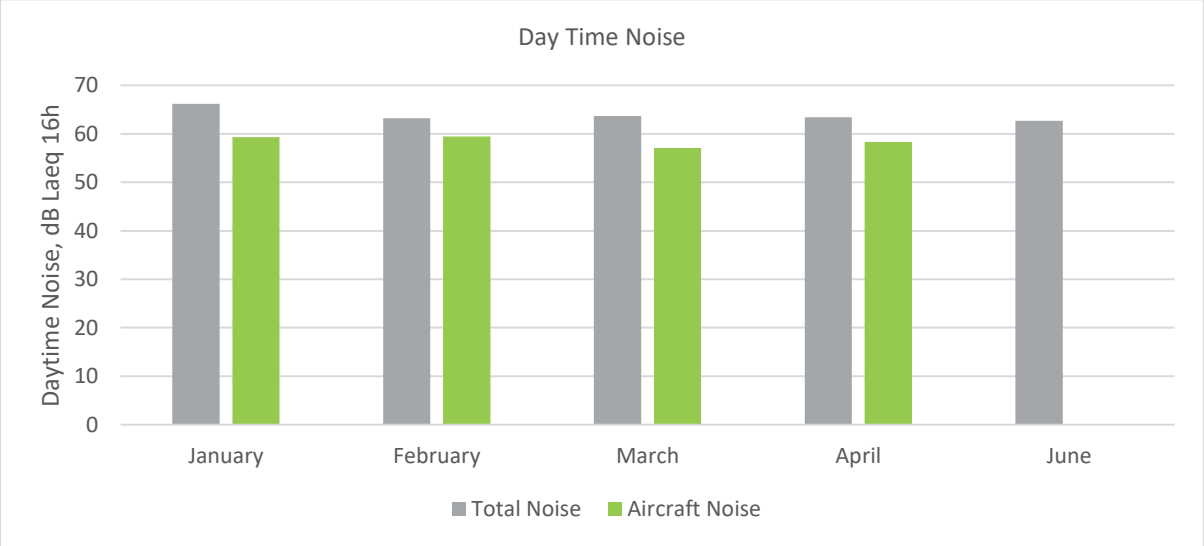

Figure 88: Averaged daytime noise levels for NMT 20, January – June 2023

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.

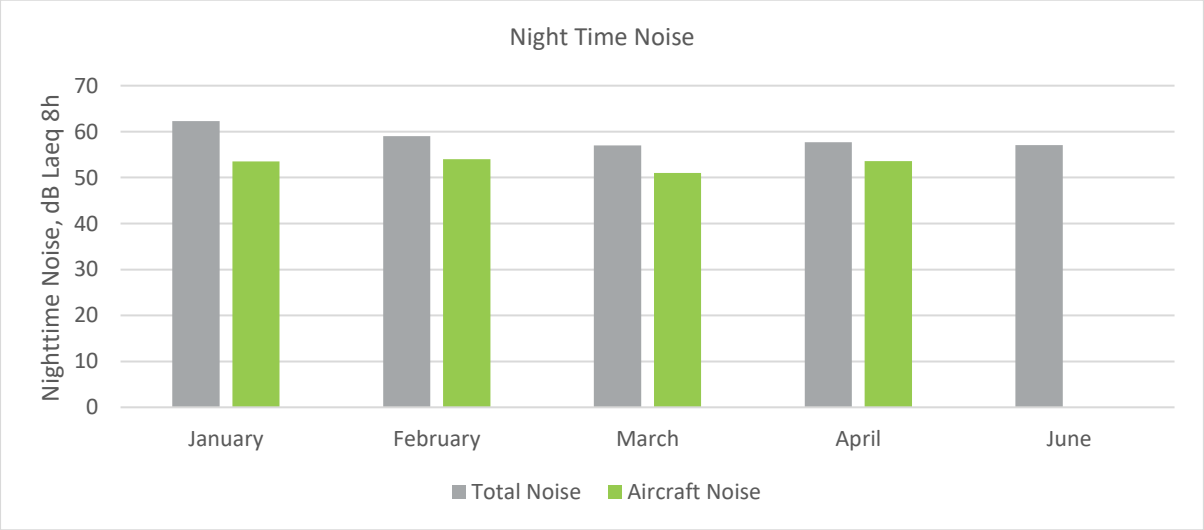

Figure 89: Averaged nighttime noise levels for NMT 20, January – June 2023

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

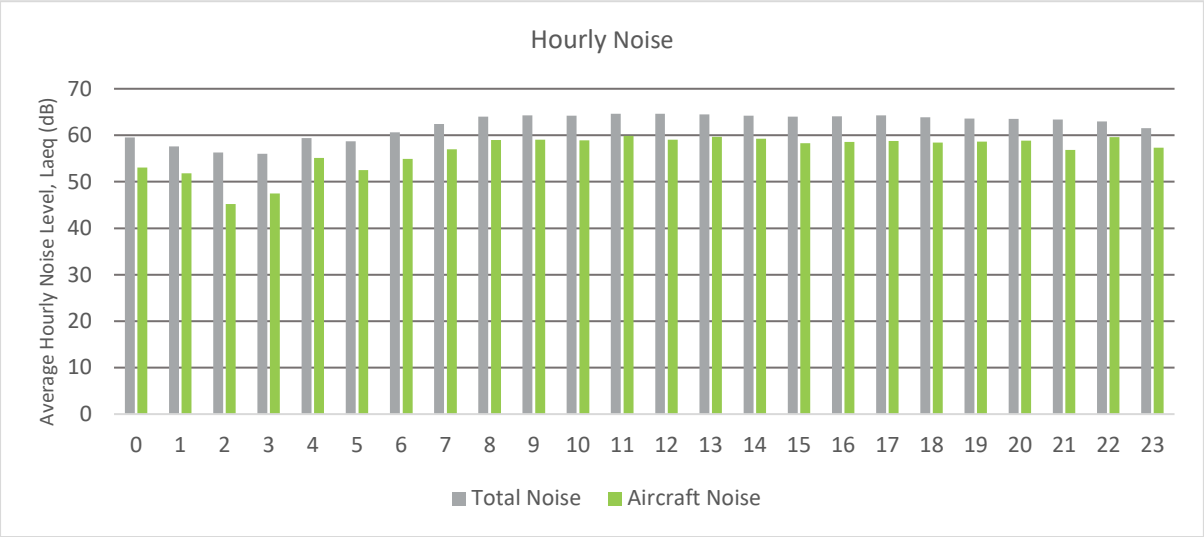

Figure 90: Averaged hourly noise levels for NMT 20, January – June 2023

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

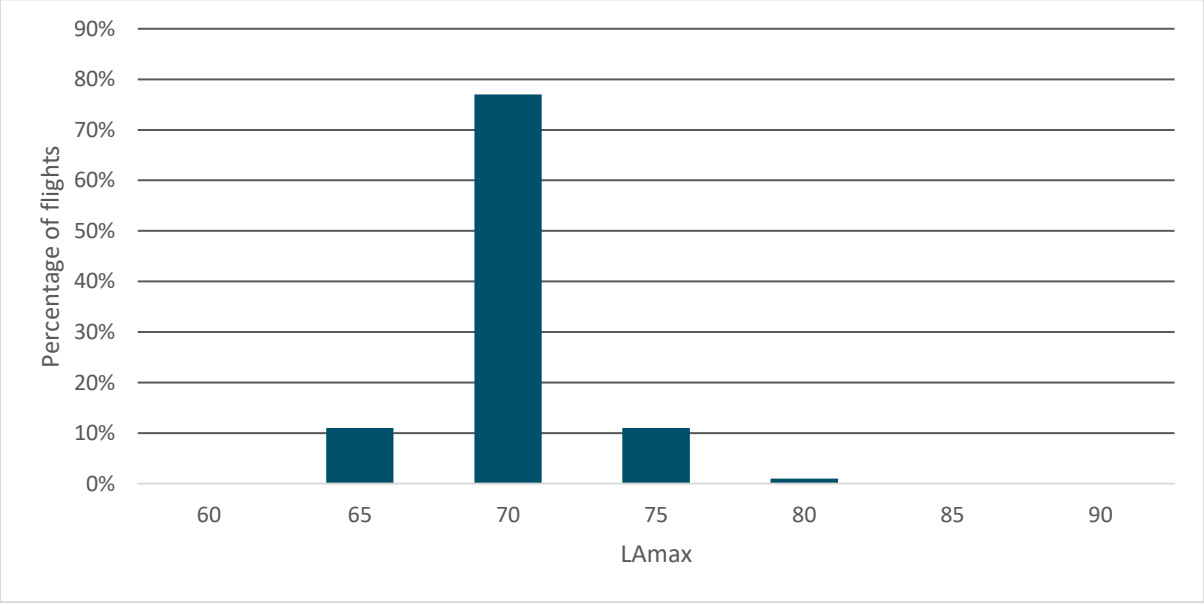

Figure 91: LAmax levels distribution for NMT 20, January – June 2023

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
C17	80.6	16
C525	78.9	1
B764	76.4	223
B77W	76.4	263
A333	76.1	1018
E121	76.1	1
A332	76	140
A339	76	2
B772	76	56
P180	75.8	1

Table 14: LAmax by aircraft types correlated to NMT 20, January – June 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.