DublinAirport

INFRASTRUCTURE

Annual Compliance Report 2023

Section 19

D00001- DAA-XXX-XX-XXX-RP-V-XXX-0003

30 August 2024

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1.0 Introduction

1.1 Compliance Report Requirements

This is the Compliance Report drafted by daa in accordance with the Aircraft Noise (Dublin Airport) Regulation Act 2019, Part 4, Section 19, for calendar year 2023 (1 January through 31 December).

The Act states "*that the airport authority shall, on or before each anniversary of the date of commencement of this section, prepare and adopt a report in writing in the specified form on the compliance of airport users with noise mitigation measures and operating restrictions.* "

Section 19(4) requires that the report includes the items in the table below which references where each item is addressed in the report.

Table 1 – Compliance Report Requirements

S19	**Description**	**Section**
4a	Particulars of failures (if any) to comply with operating restrictions due to changes in flight procedures	10 - Compliance
4b	The general criteria applied when distributing and managing traffic at the airport to the extent that those criteria may relate to noise impact	9 – Noise Mitigation Measures
4c	The data collected by the noise measuring systems	7 – Noise Monitoring
4d	Particulars of failures by airport users to comply with noise mitigation measures and, in addition to the failures referred to in paragraph (a), other failures to comply with operating restrictions (including aircraft flying off track without being directed to do so by the Irish Aviation Authority),	10 - Compliance
4e	Proposals to avoid or reduce the failures referred to in paragraph (a) or (d), or both such failures, including the imposition of financial penalties	10 - Compliance
4f	A non-technical summary of the above	2 – Non-Technical Summary

1.2 Report Structure

This report contains ten main sections structured in the following manner.

Table 2 – Report Structure

Broad Topic	Section	Section Title
Introduction	1	Introduction
	2	Non-Technical Summary
The Airport Operation and the Noise Situation	3	Airport Operations
	4	Operational Measures and Procedures
	5	Noise Contours
	6	Noise Insulation Schemes
	7	Noise and Flight Track Monitoring
Community Engagement	8	Community Engagement
Noise Mitigation Measures and Assessments	9	Noise Mitigation Measures and Objectives
	9	Compliance and Opportunities to Improve

2.0 Non-Technical Summary

This Non-Technical Summary outlines the key findings and actions from the 2023 Annual Compliance Report for Dublin Airport, focusing on the operational and noise management of Dublin Airport as mandated under Section 19 of the Airport Noise Act 2019.

Overview of Airport Operations

In 2023, Dublin Airport experienced a robust level of operational activity, reflecting its critical role as Ireland's primary aviation hub. The airport managed a significant volume of aircraft movements, with detailed tracking of runway use, particularly the newly operational North Runway. The distribution of runway use adhered to established guidelines to balance operational efficiency with noise management.

Aircraft Noise Levels

Comprehensive noise assessments were conducted throughout the year to monitor the impact of aircraft operations on surrounding areas. Noise levels were measured by a network of over 20 Noise Monitoring Terminals (NMTs) strategically positioned around the airport vicinity.

Aircraft noise levels are also published annually as noise contour maps of the entire region. The contours are calculated by a computer model to give annual and summer average day and night noise levels.

The results showed good correlation between the monitored noise levels and the modelled noise contours.

Noise Monitoring and Measurement

The NMTs provide continuous data, capturing real-time noise levels generated by aircraft during take-off, landing, and overflight operations. This data was analysed to ensure noise events from non-airport sources is excluded.

Noise and Flight Track Monitoring

Detailed point by point data of the individual flight paths is used to screen the noise data to ensure the reported airport noise includes only by aircraft operating at Dublin Airport. The flight track analysis showed a high level of adherence to prescribed routes, with deviations closely monitored and investigated.

Community and Stakeholder Engagement

Dublin Airport maintained an active engagement program with local communities and stakeholders throughout 2023. This included regular updates on airport operations, noise levels, and the North Runway's impact. Public consultations, community meetings, and the dissemination of informational materials were part of the airport's commitment to foster transparency and address concerns.

Noise Mitigation Measures and Operating Restrictions

The airport implemented a range of noise mitigation measures, including the use of preferred flight tracks and runway use, the North Runway night curfew, and restrictions on certain aircraft types. The effectiveness of these measures was continuously reviewed, with adjustments made as necessary to ensure ongoing compliance with planning conditions.

Noise Insulation and Dwelling Purchase Schemes

Dublin Airport continues to implement schemes to acoustically insulate the most noise-impacted homes and schools including offers to purchase the inner-most homes. A two-yearly review of the schemes is required in 2024 and based on 2023, the most recent operational noise contours, a few new homes will qualify for inclusion in the insulation and voluntary purchase schemes.

Compliance with Measures and Restrictions

Dublin Airport demonstrated a high level of compliance with the noise mitigation measures and operating restrictions mandated under the planning permission for the North Runway. Regular audits and monitoring confirmed adherence to these conditions, with only minor instances of non-compliance, which were promptly addressed.

Future Improvements

Looking ahead, Dublin Airport is committed to further enhancing its noise management and operational efficiency. Planned improvements include the deployment of advanced noise monitoring technology, further refinement of flight tracks, and ongoing community engagement initiatives. These efforts aim to ensure the sustainable development of the airport while minimizing its environmental impact.

3.0 Operations

3.1 Traffic

The daa Annual Reports include data on the total aircraft traffic movements at Dublin Airport each year. The figures are not the same as those used for the Annual Noise Contour calculations as shown in the table below.

Table 3 – Aircraft Traffic Movements

	2018	2019	2020	2021	2022	2023
Air Traffic Movements (daa Annual Report)	233,185	238,998	87,893	92,119	212,449	241,595
Annual Noise Contours Model Movements	232,338	238,002	87,205	91,047	210,490	240,638

The differences are generally due to the following reasons. The Annual Report figures include helicopter and military aircraft movements. Additionally, some movements such as a missed approach is not counted as an official Air Traffic Movement but may be counted as equivalent to arrival and departing noise events.

Dublin Airport accommodated more than 33.5 million passengers in 2023, compared with 28.1 million in 2022, including transfer and passengers not accessing the terminals.

Table 4 – Passenger Number

Month	2023 Passengers
January	2,117,352
February	2,059,123
March	2,482,617
April	2,834,631
May	3,049,800
June	3,244,576
July	3,458,616
August	3,456,552
September	3,112,048
October	3,001,265
November	2,299,716
December	2,406,627
Total	**33,522,923***

Summer period of 16th June – 15th September is used for some noise assessments. Air traffic movements during the summers of 2022 and 2023, divided into the 16-hour day period and the 8-hour night period were as follows.

Table 5 – Air Traffic Movement in Summer Period

Summer	Day (16hr) 07h-23h	Night (8hr) 23h-07h
2022	144,988	34,307
2023	165,771	41,360

Further operations data is provided in Appendices 2 to 6 including the following:

- Percentages of arrivals and departures each hour of the day
- The origin and destination airports of flights by percentage
- The usage of different departure routes out of the Dublin Airport area

3.2 Aircraft Fleet

A summary of the aircraft fleet operating at Dublin Airport during 2022 and 2023 as reported in the respective Annual Noise Contour reports is provided below.

Table 6 – Aircraft Fleet

Aircraft	2022 Movements	2023 Movements
Airbus A220-100		544
Airbus A220-300		2,086
Airbus A306	532	108
Airbus A319	4,009	2,509
Airbus A320	48,674	49,390
Airbus A320neo	2,545	8,611
Airbus A321	2,538	3,323
Airbus A321neo	6,443	7,948
Airbus A330	8,035	8,953
Airbus A330neo	4	8
Airbus A350	568	1,007
ATR 42	42	166
ATR 72	13,567	21,442
Boeing 737-400	962	624
Boeing 737-700	385	359
Boeing 737-800	68,112	75,263
Boeing 737 MAX	21,777	25,420
Boeing 757	1,610	2,394
Boeing 767	3,412	4,138
Boeing 777	2,548	2,935
Boeing 787	4,744	5,324
Bombardier CS300	973	
Bombardier Dash 8	358	524
Embraer E190/195	6,458	7,448
Embraer E190-E2	548	946
Cessna 560XL		765
Embraer Phenom 300		527
Bombardier Global Express	494	
Learjet 35/40/45		631
Other	11,646	6,751
Total	**210,490**	**240,638**

3.3 Fleet and Chapter Analysis

Figure 1 shows the distribution of aircraft type groups based on movements across 2022 and 2023. Only aircraft types with more than 200 movements are shown to improve readability. As shown, in both years the B737-800 (B738) and A320 aircraft types were used the most at the airport.

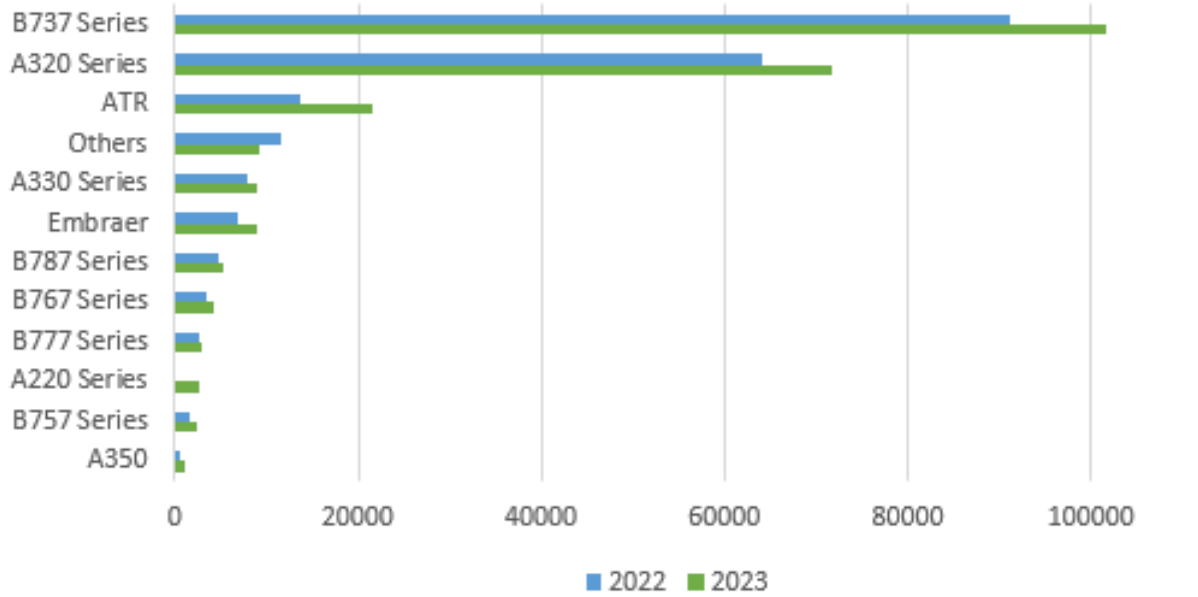


Figure 1 - Aircraft Type and Fleet Mix (2022 versus 2023)

A review was conducted of the schedule of operations for 2023, including the individual movements by aircraft type and registration. This schedule included noise certification data and registered maximum take-off weight (MTOW), as provided by the airport users in the latest Fleet Declaration Forms.

The results of the assessment, and those from the earlier assessments, are presented below in Table 7 and Table 8**.** The ICAO Annex 16 - Environmental Protection - Volume I - Aircraft Noise is used to designate the aircraft operating at Dublin Airport and allow reporting by relevant chapter. Of most relevance to Dublin Airport are Chapters 3, 4 and 14 which relate to subsonic jet aircraft and large propeller aircraft (over 8,618 kg). Aircraft of these general types undertake most of the operations at Dublin Airport.

The most recent standard for these aircraft types is given in ICAO Chapter 14, which is applicable to new aeroplane types submitted for certification on or after 31 December 2017, and on or after 31 December 2020 for aircraft less than 55 tonnes in mass. The previous equivalent standards were contained in ICAO Chapter 4 (applicable from 2006), and ICAO Chapter 3 (applicable from 1978).

Relatively few operations were by helicopters or light propeller aircraft. Requirements for these aircraft are given in different ICAO chapters which are not directly comparable. A small proportion of the operations did not have complete data and it was therefore not possible to assess these aircraft. This generally related to movements by business jets which are typically smaller and quieter than the main passenger flights.

Table 7 - Chapter Assessment Comparison 2019–2023

Item		2019	2020	2021	2022	2023
ICAO Noise Chapter Assessment using Certified MTOW	Chapter 4	73.8%	71.7%	72.5%	63.9%	60.5%
	Chapter 14	21.8%	22.6%	21.5%	32.4%	36.6%
	Sum	95.6%	94.3%	94%	96.3%	97.1%

Table 8 - International Civil Aviation Organisation Noise Chapter Assessment Results 2019-2023

Chapter	Percentage of Flights			
	2020	2021	2022	2023
Chapter 3 Marginal	1.2%	0.2%	0.1%	0.2%
Chapter 3	0.0%	0.0%	0.0%	0.0%
Chapter 4	71.7%	72.5%	63.9%	60.5%
Chapter 14	22.6%	21.5%	32.4%	36.6%
Helicopter and Light Propeller Aircraft	1.9%	2.3%	0.9%	0.7%
Unknown	2.7%	3.6%	2.7%	1.9%

4.0 Operational Measures and Procedures

4.1 Overview

This section examines a range of Operations Measures listed below.

Section	Item	Name	Content
4.2	PRU	Preferred Runway Use	Conditions 3 and 4 of the NR Planning Permission
4.3	IFP	Instrument Flight Programming	
4.4	Arrival	Arrival Procedures	Continuous Descent Operations (CDO) Visual Approach
4.5	Departure	Departure Procedures	Noise Abatement Departure Procedures (NADP)
4.6	EGR	Ground Noise and Engine Ground Running	

4.2 Preferred Runway Use

Dublin Airport has three runways:

Table 9 - Runways

Runway	Designation	Notes
South Runway (**SR**)	10R - 28L	Opened in 1989
North Runway (**NR**)	10L - 28R	Planning Permission in 2007. Opened in 2022
Cross Runway	16 - 34	

Note the above runway designations are based on the direction (or heading) an aircraft faces during an operation on that runway. Accordingly, 10 is facing east, 28 west, 34 north and 16 south. For the parallel NR and SR, the L or R indicates whether it is on the left or the right.

Runway use for aircraft arrival and departure movements are mainly governed by two factors:

1. Wind direction and speed, and
2. The Conditions 3 and 4 of the NR Planning Permission.

Aircraft must land and take-off facing into the wind (unless the wind is less than 5 knots when they can operate with a tail wind.) Operations will use the two parallel runways oriented east-west, unless there is a strong north or south wind, when the Cross Runway might be used.

At Dublin Airport winds are predominantly westerly occurring 70 to 80% of the time, when aircraft will arrive from the east over the Irish Sea and depart towards the west on Runways 28L and 28R, in

easterly winds, aircraft will arrive from the west and take off towards the Irish Sea to the east on Runways 10L and 10R.

Conditions 3 and 4 define the Preferred Runway Use requirement, summarised below.

- The parallel NR and SR should be used in preference to the Cross Runway except "essential use" for safety reasons. (c. 3a and c. 4)
- For westerly winds, arriving aircraft should use SR (Runway 28L) and departing aircraft either NR (28R) or SR (28L). (c. 3b)
- For easterly winds, arriving aircraft should use NR (10L) or SR (10R) and departing aircraft should use SR (10R). (c. 3c)
- NR is closed at night 2300 to 0700 hr (c. 3d)

The table below show the actual runway use in 2023 to demonstrate compliance with the Preferred Runway Use requirement. At under 0.1% the NR (10L) was barely used for easterly departures (c. 3c) and NR 28R was rarely used for westerly arrivals (0.8%) as per c. 3b. With 0.11% of all operations, the Cross Runway was only used during high northerly or southerly winds, usually during stormy conditions. (c. 3a and c. 4).

Table 10 – Runway Use

Runway	Heading (and Side)	Percentage of Arrivals	Percentage of Departures	Percentage of Total Operations
North RW	10L	16.0%	0.08%	8.0%
	28R	0.76%	52.1%	26.4%
South RW	10R	10.5%	26.6%	18.6%
	28L	72.5%	21.1%	46.8%
Cross RW	16	0.11%	0.09%	0.1 %
	34	0.0%	0.01%	0.01%

Essential Maintenance

As per Condition 3d the NR was not used at night except during essential SR night-time work. These instances including maintenance operations listed below on the dates in 2023 listed further below.

- Rubber removal
- Grass cutting
- Quarterly visual inspection
- Paint markings
- Pavement and airfield ground lighting repairs.

Essential Maintenance SR Closures:
Monday, January 30 and Thursday, February 2, 2023
Tuesday, March 21 and Friday, March 24, 2023
Monday, July 10 and Thursday, July 11, 2023
Tuesday, July 18 and Thursday, July 20, 2023
Monday, September 4 to Thursday, September 7, 2023
Monday, November 6 to Friday, November 10, 2023
Wednesday, December 13, 2023
https://www.dublinairport.com/corporate/airport-development/north-runway/latest-news/1

Figure 2 below shows a chart of the arrivals and departures for each hour of the day during 2023. The vertical chart scale is presented as the Average Arrival and Departure movements per day for the year.

Runway Use Data

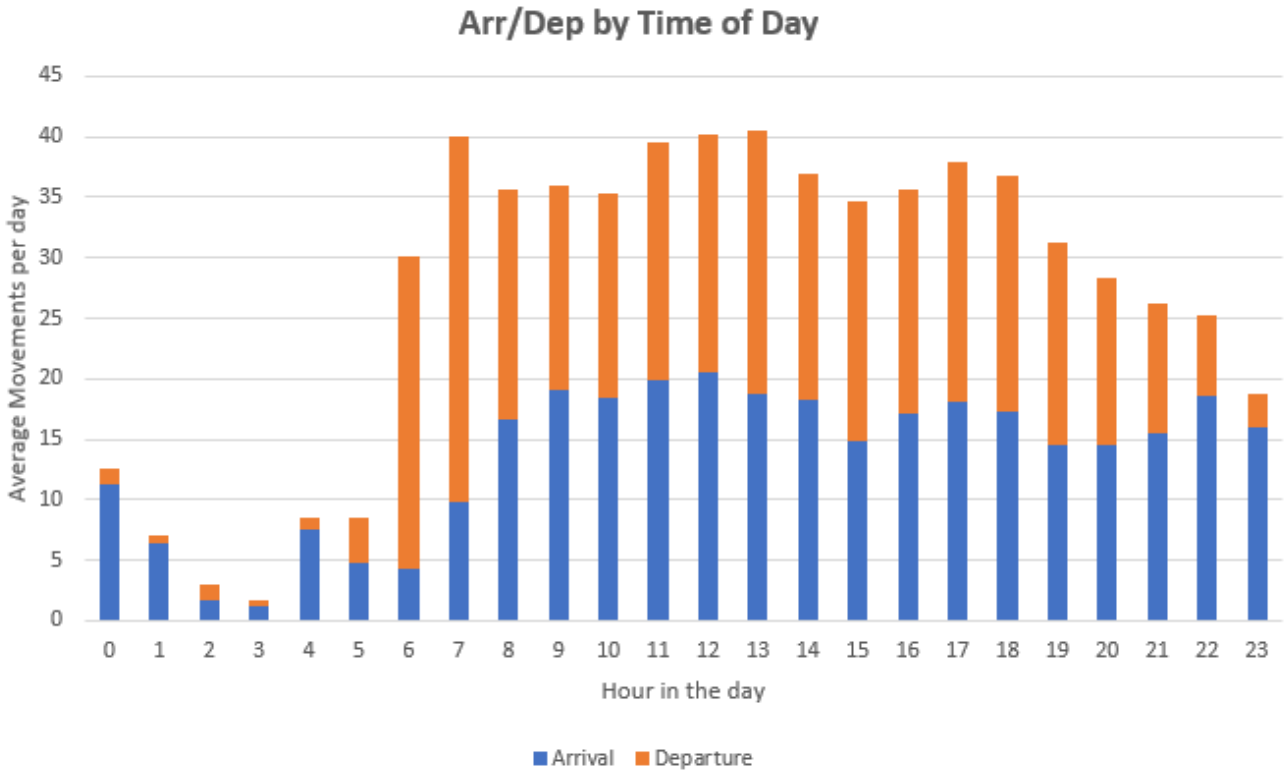


Figure 2 - Runway Use by Hour

Figure 3 below shows a chart of the use of the North versus South runway of each hour of the day during 2023. The vertical chart scale is the percentage of total annual movements for the year. The total hourly movements are the same data as in Figure 2, presented on a different vertical scale. The relative heights of the columns in each figure are the same.

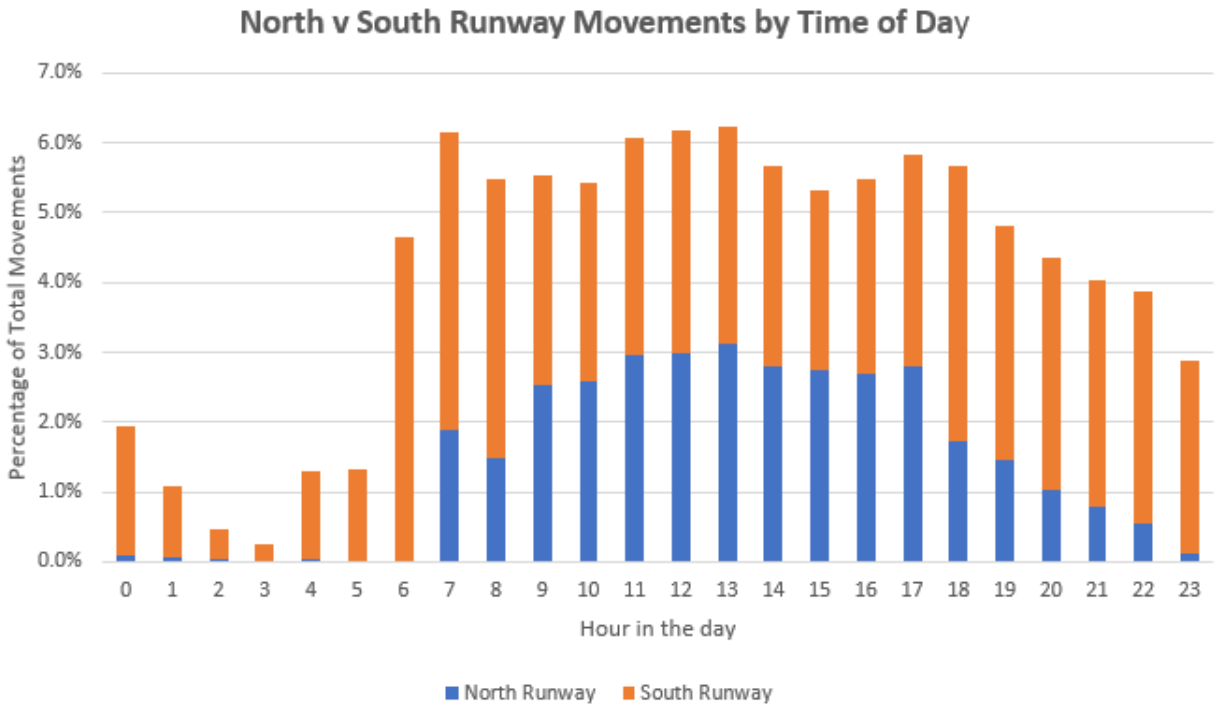


Figure 3 - Runway use by Runway and Hour

Night-time movements (23-07h) represent 9.2% of total annual movements. Night-time movements on the North Runway were 898 movements or 0.38% of total annual movements.

4.3 Instrument Flight Procedures

A review of the Instrument Flight Procedure (IFP) listings schedule (Appendix 13) was undertaken with AirNav Ireland and the Safety, Regulation, and Compliance Department at daa. A list of 4 IFP changes completed in 2023 that either became effective within the AIP or were targeted for implementation in 2023 were reviewed. The reasons for the requirement to change the IFP vary from updating documentation and procedures arising from infrastructure improvements to optimizing departure operations off RWY's 28R and 10L. The changes broadly cover apron and taxi way operations as well as CAT C/D SIDs. Further detail is provided in Appendix 13 with potential noise impacts and incidents of failures set out.

4.4 Arrival Procedures

Aircraft operators are instructed to ensure that, always, aircraft are operated in such a way as to cause the least disturbance practicable in areas surrounding the airport. The following subsections describe the specific noise abatement operating procedure measures.

4.4.1 Visual Approach Jet Aircraft

Jet aircraft (Category C/D) on visual approach to Runways 28L, 10R, 28R, 10L, 16, and 34 must join final approach no closer than 6NM from touchdown. Aircraft must follow a descent path that will not result, at any time, in being lower than the approach path, which would otherwise be followed using the instrument landing system (ILS) glide path.

4.4.2 Continuous Descent Operation

Continuous Descent Operation (CDO) is an arrival procedure where the pilot approaches the airport on a continuous downward slope, avoiding segments of level flight during the descent. This reduces noise at ground level in two manners. Firstly, as level flight requires engine thrust, during CDO the engines can remain at idle, the lowest operational and least noisy setting. Secondly, the aircraft's remains at maximum height for as long as possible, maximising the distance between the noise source and any receptors at ground level.

CDO also provides a benefit of reducing fuel burn and associated emissions.

4.4.3 Reverse Thrust

After an aircraft has touched down on a runway, Reverse Thrust is used to slow the aircraft in addition to the use of the brakes on the undercarriage wheels. Panels on the side of the engines open and direct some of the airflow forwards instead of backwards. The pilot applies engine thrust and projected forward this slows the aircraft. Reverse thrust can also be used in the event of a rejected take-off or certain other situations.

According to the procedures published in the AIP, reverse thrust should not be used during landing operations on any runway in the night-time hours between 23:00 and 06:00, except where operational or safety reasons dictate otherwise.

4.5 Departure Procedures

4.5.1 Noise Abatement Departure Procedure Climb Profile

Noise abatement departure procedure (NADP) climb profiles are operating procedures that identify rates of climb to a standard speed. The procedures are intended to be beneficial for noise-sensitive areas either in proximity or more distant from the airport. There is no comment within the guidance to designate what is in proximity or more distant.

4.5.2 Noise Preferential Routes

A departing aircraft is required to follow a flight path called a Standard Instrument Departure (SID) designed by AirNav Ireland to facilitate the transition from take-off to the en-route phase of flight while maintaining separation from other departing and arriving aircraft.

Noise Preferential Routes (NPRs), also known as Environmental Corridors, define adherence to the SID flight track. Aircraft flying inside the NPRs are deemed to be flying on-track up to the end of the relevant NPR or on reaching the minimum required altitude (3,000ft for the South and Cross Runways and 4,000ft for the North Runway).

The NPRs are displayed in Appendix 4.

An aircraft may be instructed by Air Traffic Control onto a more direct heading to its destination, due to various reason including weather and congestion.

The NPR corridors are included in the Dublin Airport Noise and Flight Track Monitoring System (NFTMS), called ANOMS, which can monitor and report adherence to the NPR. Track Adherence refers to the jet aircraft departures remain within the NPR until the required minimum height. Data on Track Adherence is report in Dublin Airport's Quarterly Noise and Flight Track Monitoring Reports.

The NPRs do not apply to Category A/B aircraft (light aircraft, turboprop).

4.5.3 Continuous Climb Operations

Continuous climb operation (CCO) is a departure procedure where the aircraft climbs to cruising altitude avoiding segments of level flight. While this might require more thrust (and more engine noise) getting an aircraft higher soon can have a noise benefit for receptors at ground level.

There can also be a fuel burn benefit.

4.6 Engine Ground Running

Engine test runs are a normal part of operations at Dublin Airport. Engine test runs must be carried out after heavy maintenance on an aircraft to comply with international safety regulations. Strict conditions govern high-powered engine test runs that take place at the airport. While technological advances in aircraft engine design mean that modern aircraft have a lower noise impact than older aircraft, noise impacts still exist; therefore, there are strict controls for when engine test runs may be undertaken.

Engine test runs are not permitted between 20:00 and 07:00. All aircraft types may undertake testing between 09:00 and 20:00, and only aircraft up to Category C may undertake engine testing between 07:00 and 09:00, per the requirement within *Aerodrome Manual*, *Direction 6.10*, and mandated within the *Aeronautical Information Publication* (AIP).

Section 5 of the AIP discusses engine ground running and provides requirements for both high-power and idle speed runs for five designated test site locations, aircraft stands, and the facilitation of larger aircraft.

daa records engine ground running through its Airside Operations and Safety Officers (AOSOs); the data are compiled in an operations log. In 2023, engine ground running was facilitated at Engine Test Sites 1 and Runway 16/34 for high-power speed runs, while idle speed runs were completed on stand, as required. Operational logging of idle speed test runs is not ordinarily undertaken by the AOSOs. Table 10 compares the 2020, 2021, 2022 and 2023 total engine test runs, and Table 11 lists the engine test split by aircraft type. Table 12 presents the duration of the tests performed in 2023.

Table 11 - 2020 - 2023 Comparison – Total Engine Test Runs

Location	2020	2021	2022	2023
Test Site 1 (high power)	184	94	98	99
Runway 16/34 (aircraft larger than code C/B757)	7	4	8	16
Test Site 4	N/A	2	0	1
Total	**191**	**100**	**106**	**116**

Table 12 - Engine Test Run Split by Aircraft Type (incomplete data for Runway 16/34 data)

Aircraft Type	No. of Test Runs
737	29
738	13
767	1
752	4
A319	3
A320	17
A321	5
ATR72	19
787	1
Other	22

*Table 13 - 2022 Engine Test Run Duration * No engine test runs were performed during night-time hours in 2022*

Duration of Engine Tests (mins)	No. of Test Runs
>0 – <=5	0
> 5 – <=10	0
10–15	1
15–20	3
20–25	4
25–30	1
30–35	18
35–40	2
40–45	9
45–50	9
50–55	1
55–60	0
60–65	52
65–70	0
70–75	0
75–80	0
80–85	0
85–90	0
90–95	6
95–120	6
120–200	1

The AIP requires that no engine test running is permitted before 07:00 and there were no recorded tests running in that period.

The testing of CAT C/D between 07:00-09:00 is also not permitted. There was 1 record of a test starting at 07:30 of an A332 widebody aircraft (25 July 2023).

During the year there were 6 tests that ran after 20:00. Five of these ended between 20:05 and 20:25. One test ran from 21:04 to 21:51 (11 June 2023).

5.0 Noise Contours

Bickerdike Allen Partners (BAP) was retained by daa to produce the noise contours for 2023. The annual contours produced for Dublin Airport are based on the movements listed in Section 3.1 above and present the metrics used by the EU, L_{den} and L_{night}. (See Figure 6 and Figure 7 below.)

Noise contours were also produced based on the movements in the 92-day summer period (June 16 to September 15) for two metrics, $L_{Aeq,16h}$ daytime (07-23h) and $L_{Aeq,8h}$ night-time (23-07h). (See Figure 8 and Figure 9 below.)

Table 13 through Table 16 compare the contour areas for the years 2019 through 2023 of the annual L_{den} and L_{night}, and the summer $L_{Aeq,\ 16h}$ and $L_{Aeq,\ 8h}$ contour areas, respectively.

Table 14 - Annual Lden Contour Areas

Metric Value, dB L_{den}	Contour Area, km²				
	2023	2022	2021	2020	2019
≥ 45	630.2	476.3	290.6	237.2	745.7
≥ 50	250.4	171.3	111	90.3	218.7
≥ 55	105.0	79.0	45.8	36.5	88.3
≥ 60	39.8	29.1	16	12.5	35.6
≥ 65	13.0	9.3	5.6	4.4	12.2
≥ 70	4.1	3.0	2	1.6	4.4
≥ 75	1.5	1.0	0.8	0.7	1.7

Table 15 - Annual Lnight Contour Areas

Metric Value, dB L_{night}	Contour Area, km²				
	2023	2022	2021	2020	2019
≥ 40	312.0	228.5	172.3	138.7	328.4
≥ 45	129.7	98.8	75.3	59.8	122.2
≥ 50	55.6	39.4	28.3	21.7	52.3
≥ 55	18.6	13.1	9.8	7.5	18.6
≥ 60	6.0	4.2	3.5	2.7	6.4
≥ 65	2.0	1.4	1.3	1.0	2.5
≥ 70	0.7	0.5	0.6	0.4	1.0

Table 16 - Summer $L_{aeq,16h}$ Contour Areas

Metric Value, dB $L_{Aeq,16h}$	Contour Area, km²				
	2023	2022	2021	2020	2019
≥ 51	130.3	99.9	55.2	34.2	114.3
≥ 54	74.2	60.6	30.1	18.0	69.9
≥ 57	42.8	32.2	15.8	9.6	39.8
≥ 60	22.8	16.2	8.5	5.1	21.3
≥ 63	11.9	8.2	4.5	2.8	11.4
≥ 66	6.6	4.2	2.5	1.5	6.1
≥ 69	3.6	2.1	1.4	0.9	3.3

Table 17 - Summer $L_{Aeq,8h}$ Contour Areas

Metric Value, dB $L_{Aeq,8h}$	Contour Area, km^2				
	2023	2022	2021	2020	2019
≥ 45	138.3	113.5	89.8	66.1	140.1
≥ 48	89.5	71.5	52.4	37.3	84.8
≥ 51	51.3	41.5	28.4	19.7	50.8
≥ 54	26.9	21.8	14.9	10.4	27.8
≥ 57	13.5	10.8	8	5.5	14.4
≥ 60	7.0	5.5	4.2	3.0	7.6
≥ 63	3.6	2.7	2.3	1.6	4.1

The individual 2023 noise contours, and comparison with the 2020 and 2021 noise contours, are presented in the figures in this section. Actual aircraft movements in 2022 and noise levels from the Dublin Airport NMTs were used to create the noise contours using a similar methodology to that used to produce the 2019, 2020, and 2021 contours.

Comparison of Annual L_{den} Noise Contours 2019 to 2023

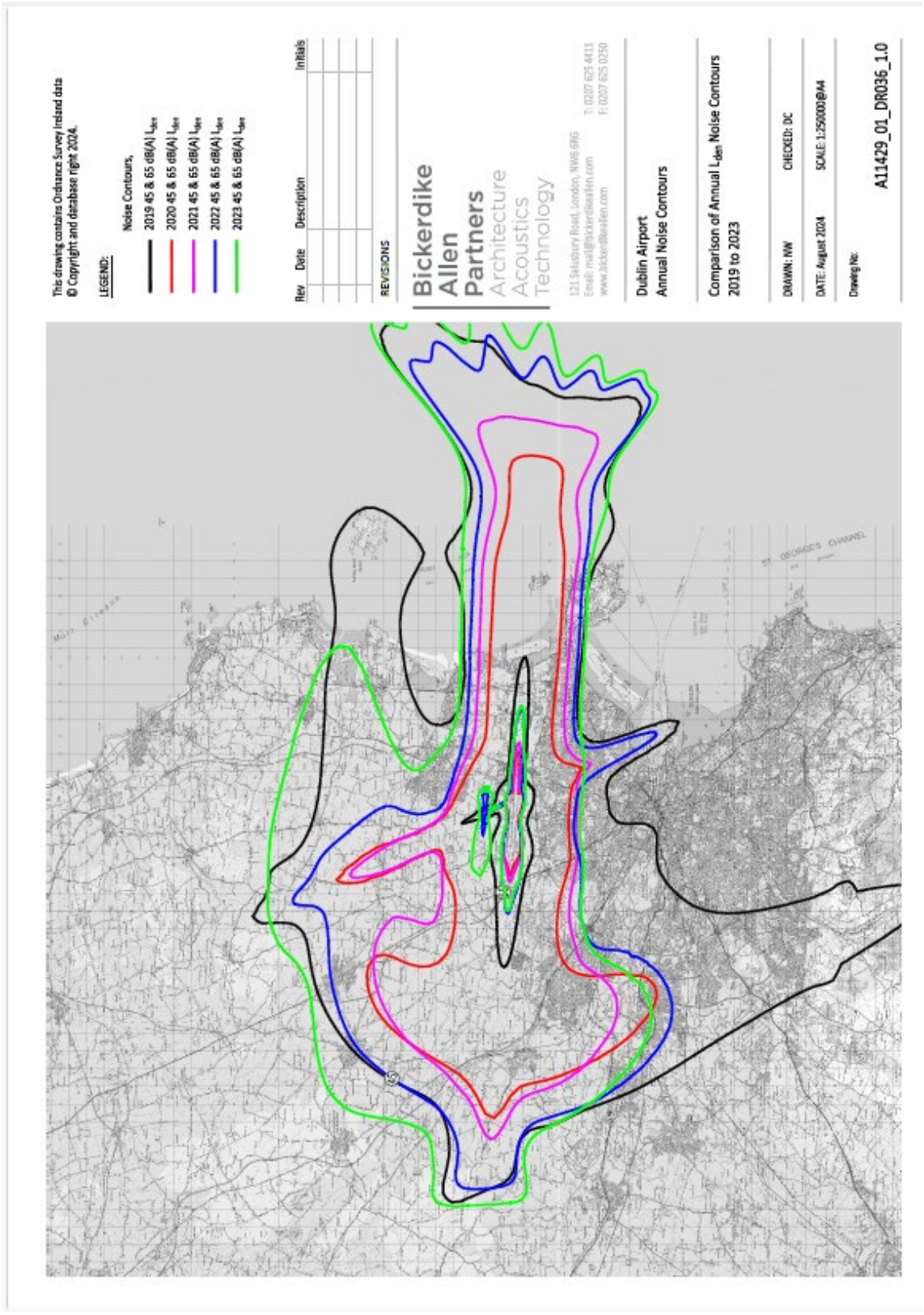


Figure 4 - Comparison of Annual Lden Noise Contours 2019 to 2023

Comparison of Annual L_{night} Noise Contours 2019 to 2023

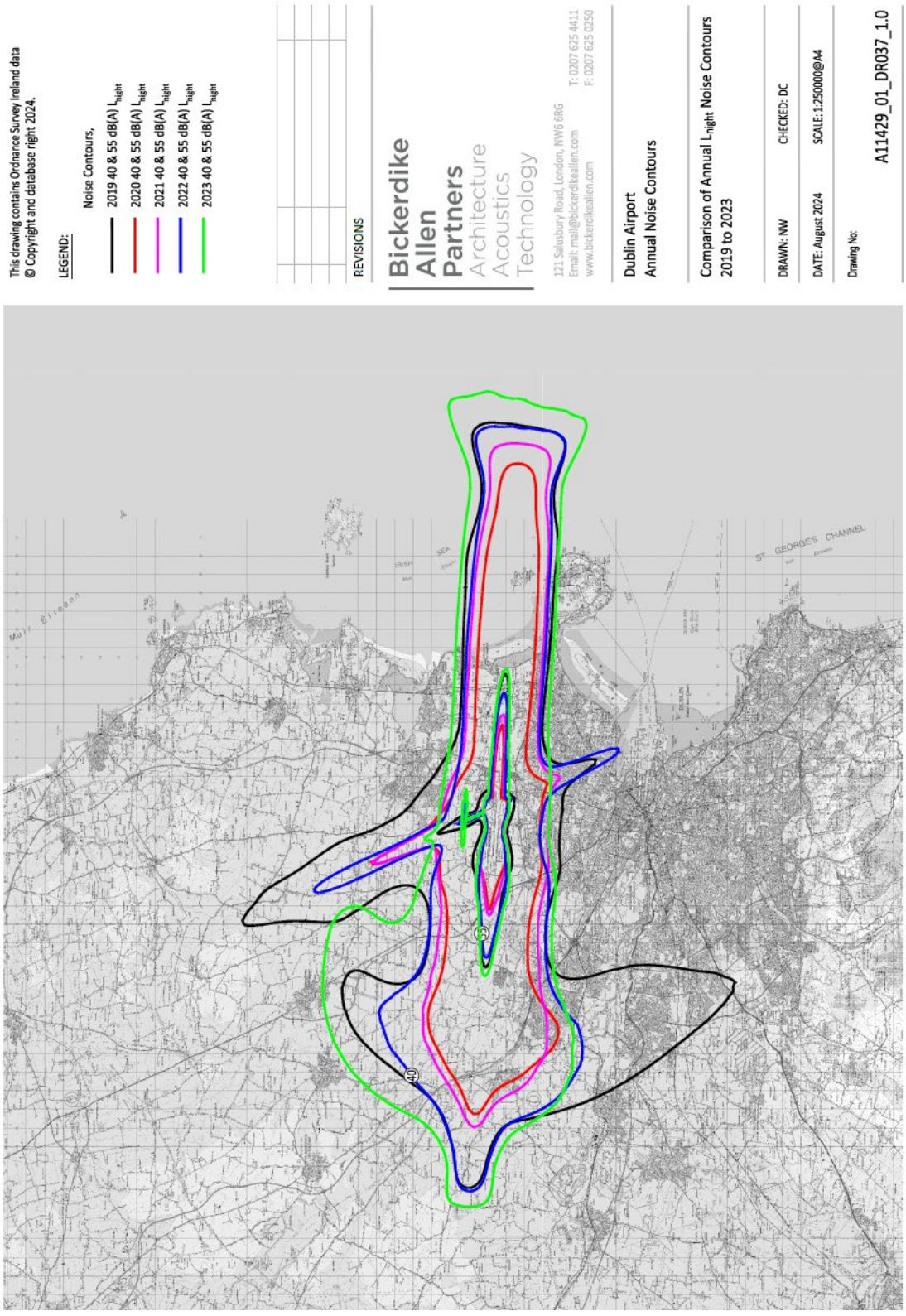


Figure 5 - Comparison of Annual Lnight Noise Contours 2019 to 2023

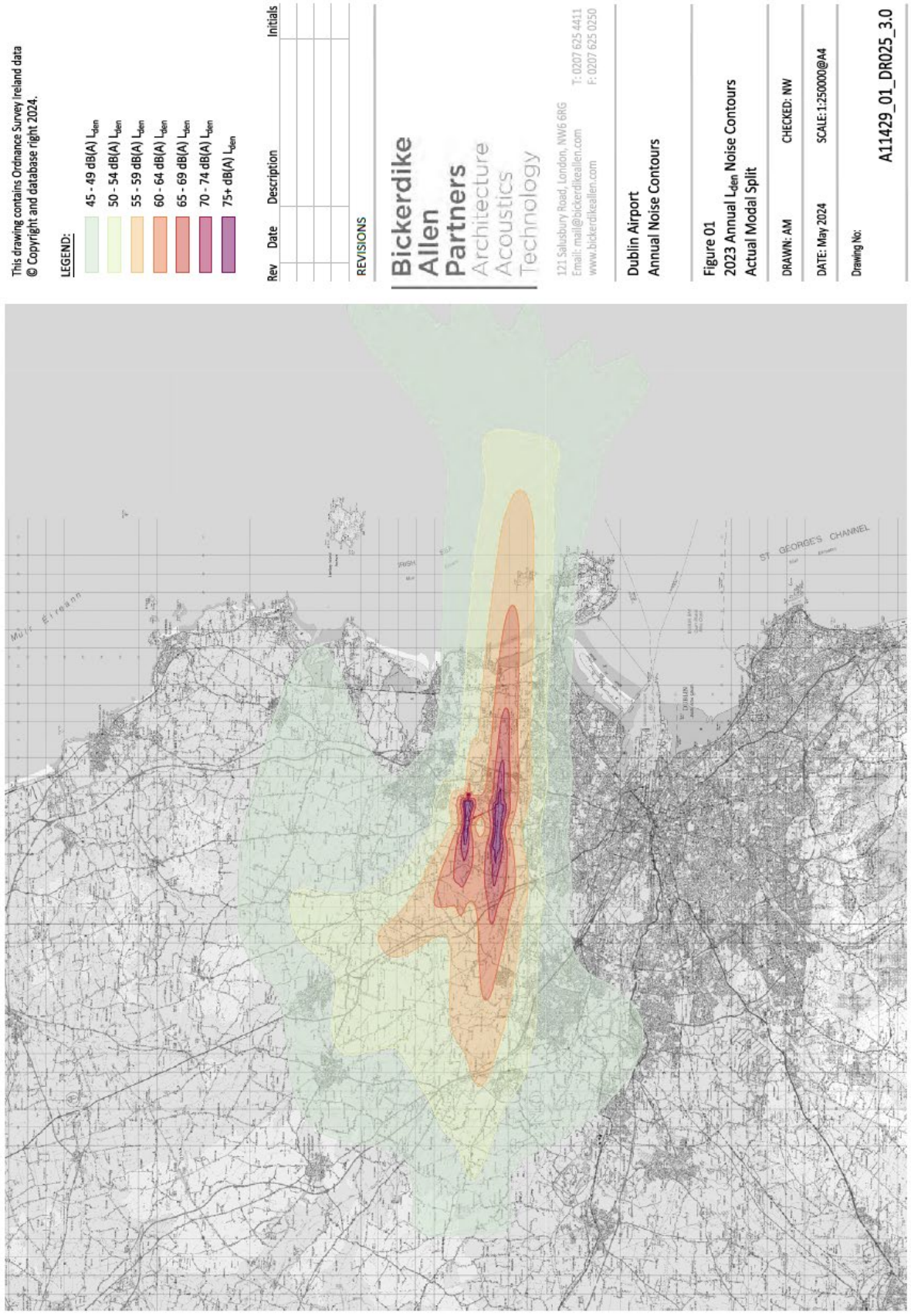


Figure 6 - 2023 Annual Lden contours (45 - 75+ dBA)

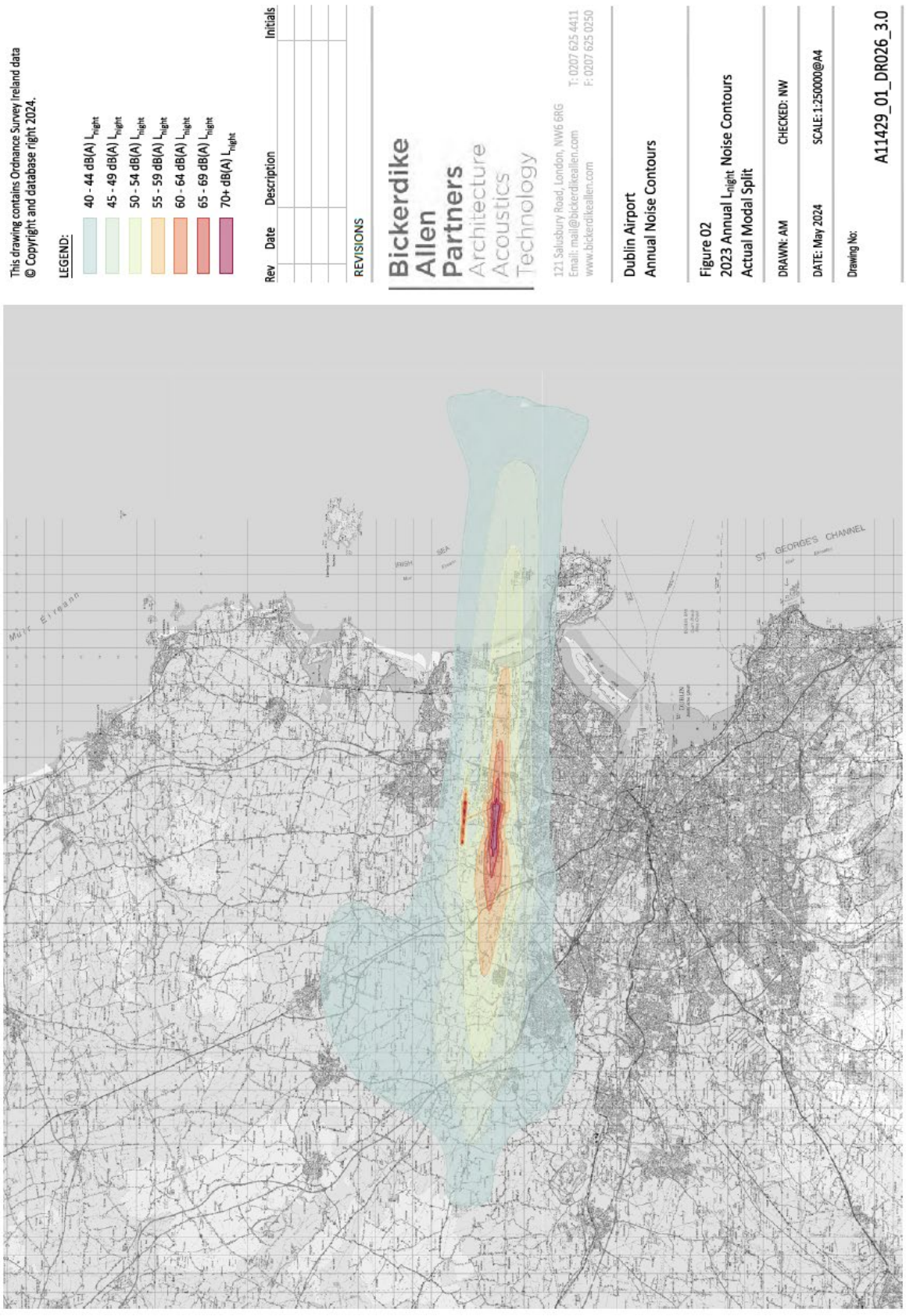


Figure 7 - 2023 Annual Lnight contours (40 - 70+ dBA)

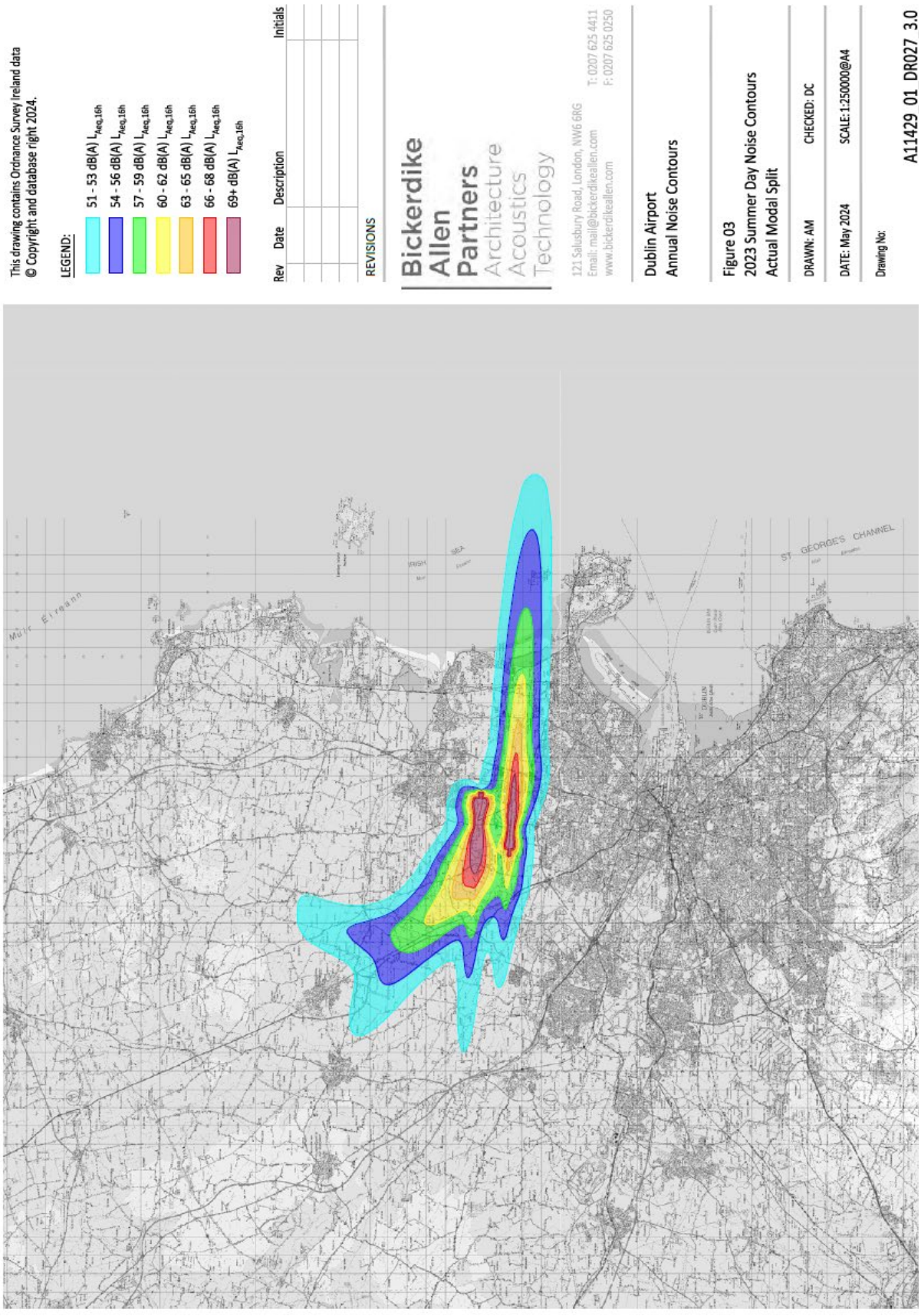


Figure 8 - 2023 Summer Leq16h contours (51 - 69+ dBA)

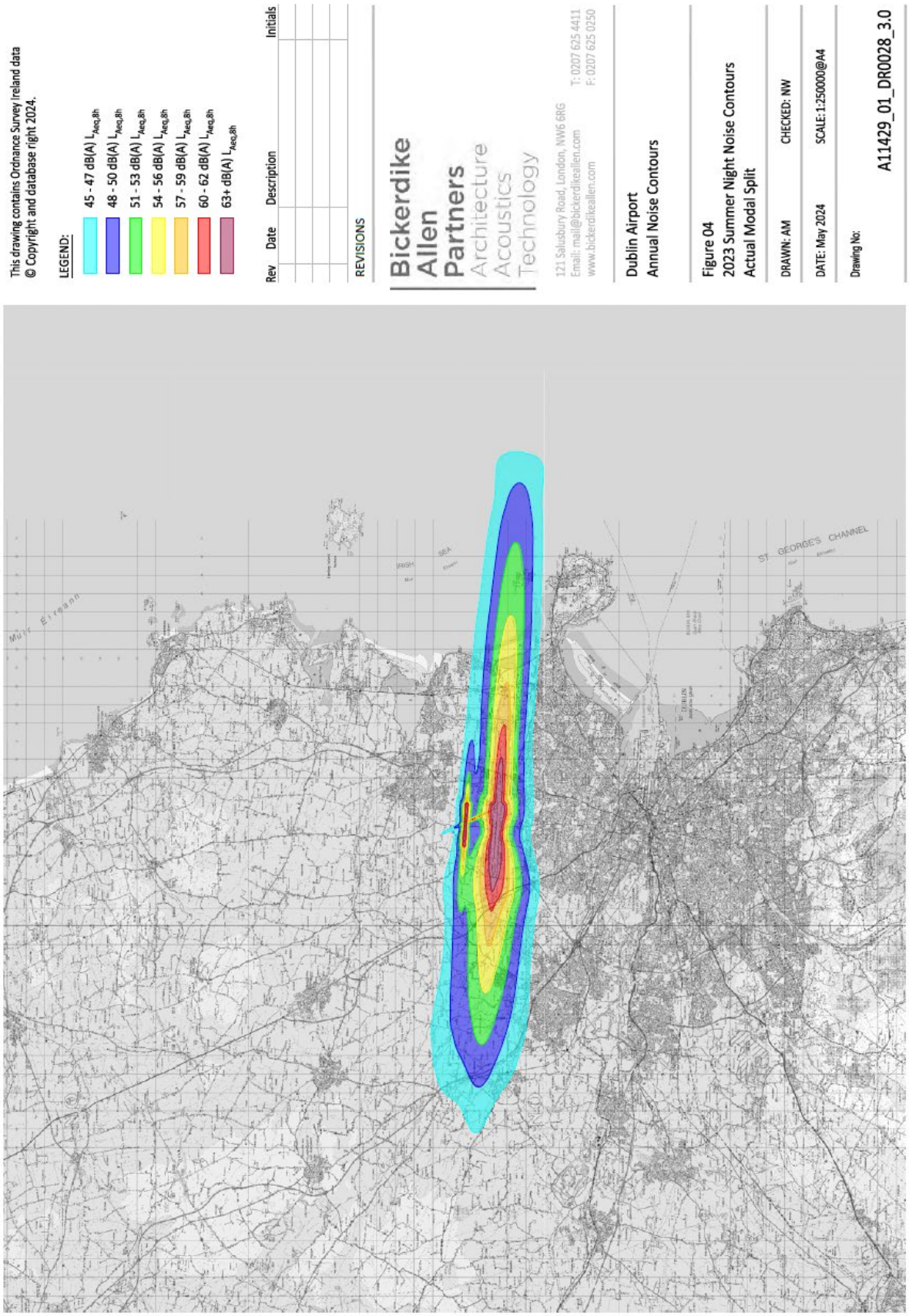


Figure 9 - 2023 Summer Leq8h night contours (45 - 63+ dBA)

6.0 Noise Insulation Schemes

6.1 RNIS (Residential)

In the RNIS Scheme Boundary, based on the 63dBA Leq16h contour agreed in 2017, there were approximately 191 eligible homes. The figure can be inexact because some homes were treated under the earlier HSIP scheme, some buildings were derelict, and one or two have disputed ownership. There were also homeowners eligible for the Voluntary Purchase Scheme, that may have opted for Noise Insulation.

Progress on the completion of noise insulation installation in homes is summarised in the table below.

As required by the NR Planning Permission Condition 7, the RNIS was reviewed in August 2024 based on the actual 2023 Leq16h summer day contours. This review is contained in a report on both Conditions 10 and 7, that was delivered to FCC the planning authority.

As indicated in the summary table the review indicated that there are a total of 13 homes in the current contour that are not in the original Scheme Boundary. These homes have now been brought into the RNIS.

Table 18 - RNIS

Phase/ Year	Eligible with Offers Made	Not Accepted	Accepted	Completed
RNIS/HSIP – Phases 1 and 2 up to end 2022	191	45	146	146 / 146
Phase 3: 2023 – August 2024 with 2023 Leq16h Summer Day Contour	13 new + previous 45	16	42	20 / 42
Total	**204**	**16**	**188**	**166**

6.2 SIS (Schools)

In the original SIS Scheme Boundary based on the 60dBA Leq16h contour agreed in 2017, there were two schools and two educational facilities. They were offered acoustic treatment and ventilation, if required. Two schools and one educational facility accepted the offer. By the end of 2023, the following schools have been treated.

- Little Moo Moos Playschool.
- St Margarets National School, and
- Saint Nicolas of Myra National School.

As required by NR Planning Permission Condition 10, the SIS was reviewed in August 2024 based on the actual 2023 60 dBA Leq16h summer day contour. No additional schools were identified as eligible for the SIS.

6.3 VDPS (Purchase)

The original Condition 9 Voluntary Dwelling Purchase Scheme (VDPS) Scheme Boundary based on the 69dBA Leq16h contour agreed in 2017 included 5 properties. There were also a further 33 properties with historical agreements with regarding voluntary purchase.

Invitations to join the scheme were sent to the 38 eligible property owners and as of August 2024 the status was as follows.

- 6 purchases have been completed,
- 3 are in the conveyancing stage of the purchase process, and
- 8 are currently undertaking valuations.

Owners elected not to sell were also offered noise insulation under the RNIS scheme. The VDPS scheme was originally set to expire 12 months from the opening of the North Runway. This was extended to 3 years by the daa so the VDPS is currently set to expire in August 2025. Homes inside the 69 dBA Leq16h contour will not be subject to this cut off and the VDPS offer will always remain available.

As required by NR Planning Permission Condition 10, the VDPS was reviewed in August 2024 based on the actual 2023 69 dBA Leq16h summer day contour. Three (3) homes were identified as now eligible for the VDPS and, as of August 2024, offers have been extended to the homeowners.

7.0 Noise and Flight Track Monitoring

7.1 Noise Monitoring Terminals

By the end of 2023, there were 19 Noise Monitoring Terminals (NMT) in place, 17 permanent and 2 portable units. Figure 10 below shows their locations near and further from the airport, respectively.

Starting in 2024 a new Quarterly Report format was developed with more detailed data on the measured noise levels including monthly and quarterly the averaged aircraft noise levels, Lden, Lnight and Leq16h, and with single event data using the "Number Above" metric for both Lmax and SEL.

7.2 Measured Noise Levels

7.2.1 Time-Averaged Noise Levels

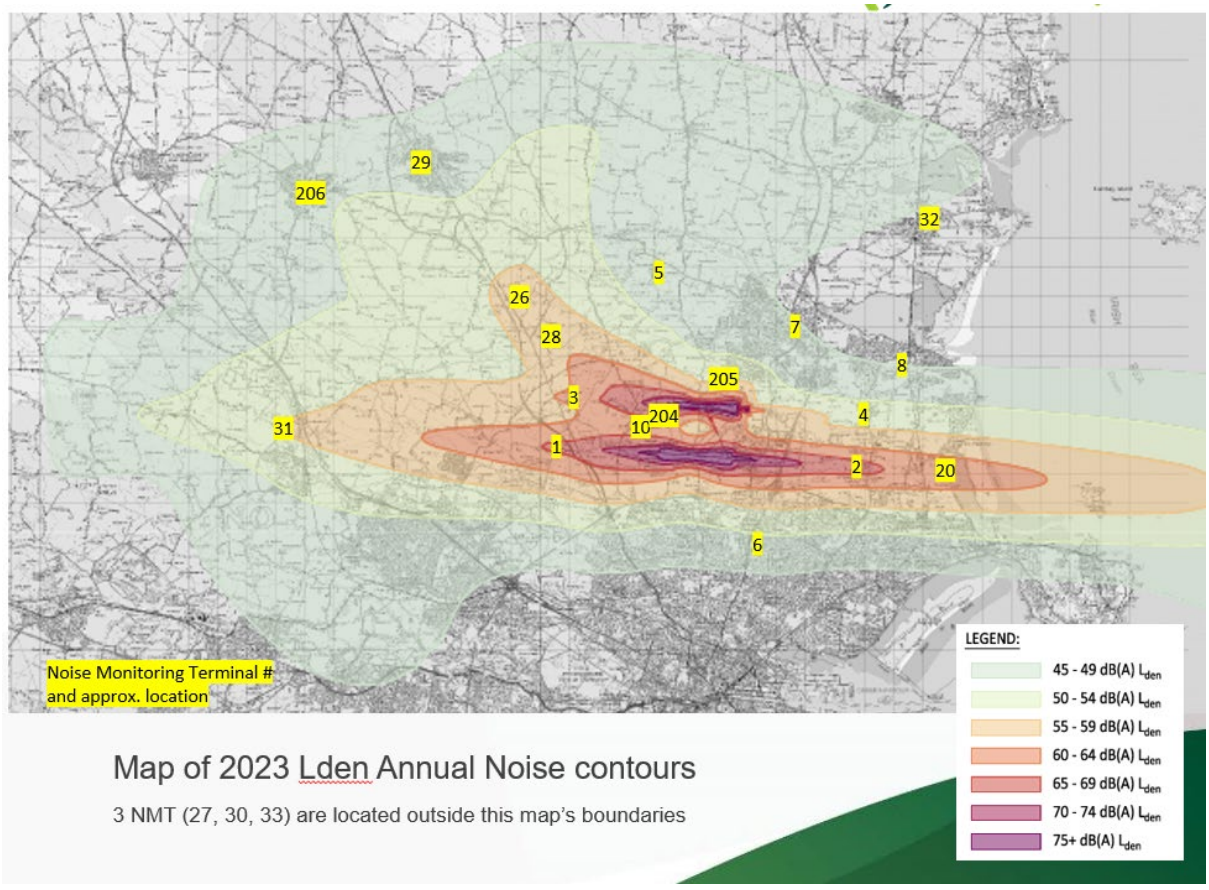


Figure 10 - Map of 2023 Lden Annual Noise Contours

Table 19 – Time-Averaged Noise Levels

#	NMT Name	Modelled Lden (dBA) from 2023 Contours	Measured Lden (dBA) from 2023 NMT	Modelled Lnight (dBA) from 2023 Contours	Measured Lnight (dBA) from 2023 NMT
1	Bay Lane	65	64	58	57
2	St Doolaghs	65	65	57	57
3	Bishopswood	60	58	49	46
4	Feltrim	54	51	46	44
5	Balcultry	49	47	39	19
6	St Davids	44	39	36	25
7	Swords	45	45	37	18
8	Malahide	46	38	38	26
10	St.Margarets NS	63	63	55	57
20	Coast Road (OP)	63	63	55	55
26	Kilcoskan NS	58	59	40	36
27	Summerhill	38	32	31	25
28	Newpark	60	62	45	35
29	Ashbourne RC	49	46	39	24
30	Roundwood GAA	36	13	28	0
31	Dunboyne EMR	54	50	47	43
32	Donabate	45	0	37	0
33	Ardgillan	33	26	24	19
204	Milhead	67	65	51	46

The reported NMT noise levels only include the noise from detected noise events that are correlated with the time and location of an aircraft flight track on the ANOMS system. Aircraft events that are not sufficiently noisy to be detected by the system as a noise event above the detection threshold do not get included in the aircraft noise level. Noise events that do not correlate with an aircraft flight track are categorised as Community Events and are not included in the aircraft noise level.

In contrast the aircraft noise model that is used to calculate the airport noise contours adds up all of the noise from every aircraft accessing the airport and thousands of grid points covering the entire study area.

This means that the Measured NMT noise levels are more likely to miss some noise that is included in the Modelled noise levels.

In the table above, it can be seen that in virtually all cases, the Measured NMT aircraft noise levels are equal to or slightly less than the Modelled (Contour) noise levels.

7.2.2 Single Event Data

The noise data from individual events based on the Lmax metric are presented for each noise monitor in 2023. N60, for example, is the average number of events per day with Lmax 60 or greater.

Table 20 – Number Above Daily Average Number of Aircraft Noise Events Above Lmax (dBA)

	NMT Name	Number Above Daily Average Number of Aircraft Noise Events Above Lmax (dBA) in 2023						Daily Average Number of Aircraft Noise Events in 2023
		N60	N65	N70	N75	N80	N85	
1	Bay Lane	97.7	97.7	95.2	65.2	12.2	0.3	97.7
2	St Doolaghs	302.2	302.1	285.1	138.3	4.7	0.2	302.2
3	Bishopswood	157.1	157.1	121.0	42.0	1.7	0.1	157.1
4	Feltrim	35.7	28.1	7.3	2.7	0.2	0.0	35.7
5	Balcultry	6.0	5.8	2.8	0.5	0.2	0.0	6.0
6	St Davids	1.8	1.8	0.9	0.2	0.1	0.0	1.8
7	Swords	1.3	1.2	0.9	0.5	0.2	0.1	1.3
8	Malahide	2.7	1.4	0.4	0.1			3.7
10	St Margarets NS	196.4	189.8	183.8	106.8	11.7	0.2	197.2
20	Coast Rd (OP)	238.1	238.1	212.6	26.3	1.3	0.2	238.1
26	Kilcoskan NS	150.0	146.2	130.5	67.2	7.7	0.1	150.0
27	Summerhill	1.0	0.7	0.1	0.0			1.0
28	Newpark	267.9	265.3	216.5	142.5	20.6	1.7	267.9
29	Ashbourne	9.7	9.0	2.7	0.2	0.0		9.7
30	Roundwood	0.0	0.0	0.0				0.0
31	Dunboyne	24.2	19.7	3.9	0.3	0.0	0.0	24.2
32	Donabate	0.3	0.3	0.2	0.1	0.1	0.0	0.3
33	Ardgillan	0.2	0.1	0.1				0.2
204	Milhead	268.8	267.3	262.2	216.0	152.5	54.2	269.6

7.3 Continuous Descent Operations (CDO)

In a Continuous Descent Approach (CDO), an aircraft stays higher for longer and descends at a continuous rate to the runway threshold therefore reducing periods of prolonged level flight at lower altitudes. With CDO less fuel is burnt, less emissions are produced but most importantly it reduces the noise by avoiding the use of engine thrust required for level flight.

In Dublin, the flight track monitoring system detects and measures descent profile and CDO from 5,500ft (above ground level) or below. Descending flight which involves with more than one section of level flight greater than 2.5 nautical miles in length following descent from an altitude of 5,500ft is considered as non-CDO. This is local shadow rule on ANOMS and that Statutory monitoring and reporting of CDO is under remit of EUROCONTROL.

In 2023, the overall CDO achievement was 77% with several major operators achieving higher performance. The chart compares the level of CDO compliance by our main airline operators.

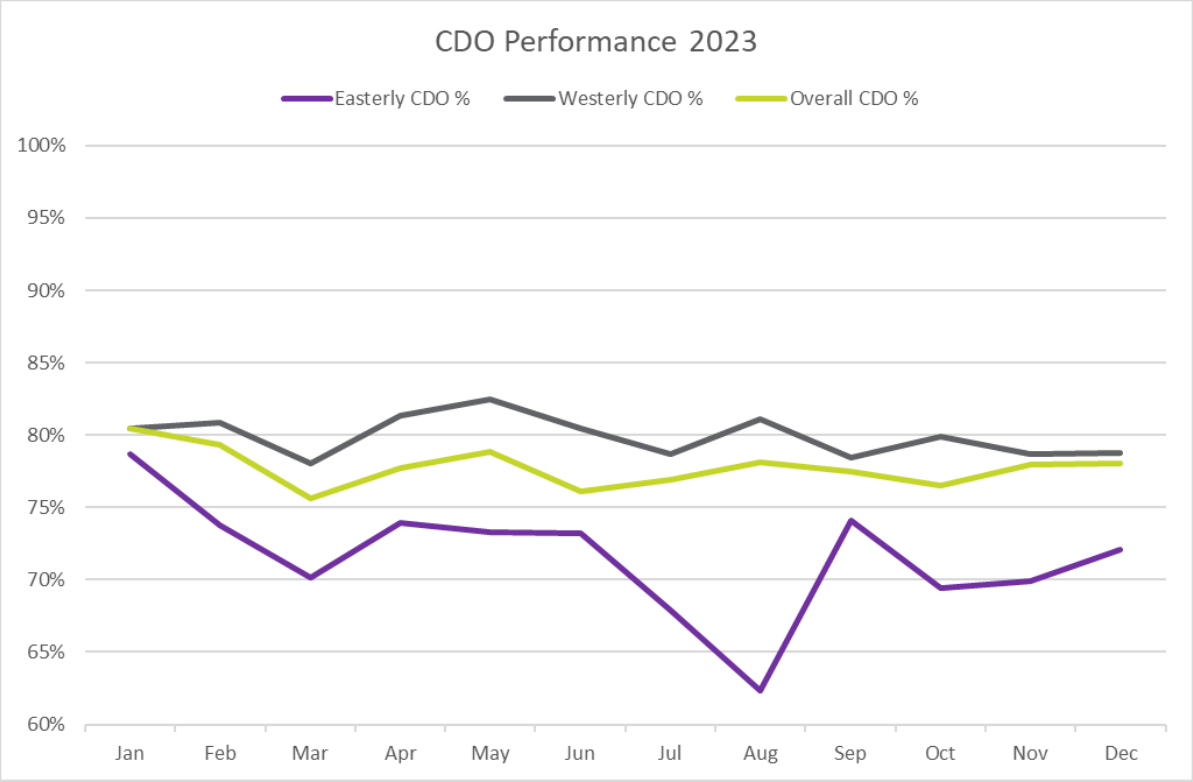


Figure 11 - CDO Performance 2023

7.4 Flight Track Keeping

The NMT are managed by software call ANOMS (Advance Noise Monitoring System) which includes data from the NMT and flight track radar and operational data from all movements into or out of Dublin Airport. The flight track data is required to endure that the NMT data is screened to separate aircraft noise from non-aircraft noise data collected by the microphones.

The track keeping can also assess certain operational parameters such as CDO discussed in the previous section.

ANOMS can also assess Flight Track performance against the Noise Preferential Routes (NPR) also known as Environmental Corridors.

Flight track monitoring is included in the Dublin Airport Monthly Reports. Track Adherence refers to jet aircraft departures that remain within the NPR up to the minimum height. In 2024 an extensive review of the Track Adherence monitoring process was conducted and a number of anomalies were corrected including a gap between the ANOMS NPR.

Appendix 12.4 contains explanations of the Standard Instrument Departures (SID) and their associated Noise Preferential Routes (NPR) also known as Environmental Corridors. Examples of departure tracks that deviate from the NPR are also presented for both the NR and the SR.

The results for the four quarters of 2023 are summarised in the table below. North Runway easterly and Cross Runway are used too seldom to report meaningful data.

Table 21 – Flight Track Keeping

Departure Runway	Q1	Q2	Q3	Q4	2023
10R (South Runway)	99.7%	99.7%	99.6%	98.9%	99.5%
28L (South Runway)	99.6%	99.1%	99.7%	99.7%	99.5%
28R (North Runway)	66.7%	91.0%	92.3%	90.9%	87.3%

Further data on NPR Track Adherence is provided in Appendix 12.7 including:

- NPR Track Deviations by Month and by Operational Runway
- NPR Track Deviations by Hour of the day, by Aircraft Type (Top 20) and by Airline (Top 20)
- Cat C/D departure data on aircraft type, number of movements and number of track deviations

8.0 Stakeholder and Community Engagement

8.1 Stakeholder Engagement

The Dublin Airport Operations Planning Group (DAOPG) is a monthly forum that includes daa, AirNav Ireland and airline representatives. The topics covered by the group include operational issues such as changes and developments in airspace, airport and runway operations, procedures, infrastructure, and noise. The DAOPG reviews and provides feedback on noise related initiatives such as reporting, flight track monitoring, noise monitoring, noise abatement procedures and operational options.

8.2 Community Engagement Forums

daa is a neighbour to many communities on whom it depends on to operate Dublin Airport. daa is fully committed to being a responsible airport operator and a good neighbour and understands that a balance needs to be achieved in terms of operating an international airport and honouring the needs of the local communities. That is why daa has a long record of engaging with its neighbours about the issues that are of importance to them, particularly those relating to aviation noise.

daa has established multiple engagement channels and forums that have been and continue to be very successfully employed to communicate and engage with the airport's neighbours in the most meaningful and effective manner.

8.2.1 Community Liaison Group

The independently chaired Community Liaison Group (CLG) was established in 2016 by An Bord Pleanála's North Runway Planning Conditions Decision Condition 28. This condition establishes that a CLG be established, involving representation from the Saint Margaret's Community, Fingal County Council, and daa, with composition of the committee to be decided from prior agreement with the planning authority that aligns with the terms of reference.

The group meets bimonthly to discuss matters of interest to the local community, including current activity and plans for the area, airport operations, and environmental issues. When required or requested, experts attend the meetings to provide an opportunity for detailed discussion on a topic that is deemed to be of particular importance to the group.

This is a hugely beneficial forum to facilitate information exchange with the community and to address issues raised, where possible. The forum also provides a solid platform for all three representative groups to communicate in an open and transparent manner.

The CLG met on March 8, April 12, May 10, July 12, October 18, and December 6, 2022. Meetings took place both in person and online.

CLG: February 7, April 18, May 30, July 18, September 5, November 14.
https://www.dublinairport.com/corporate/airport-development/north-runway/engagement/community-liaison-group

8.2.2 Dublin Airport Environmental Working Group

The independently chaired Dublin Airport Environmental Working Group (DAEWG) was established on July 1, 2005, initially as the "Dublin Airport Stakeholder," and it existed through various iterations until it was renamed in September 2015. This volunteer-based group comprises members from daa,

Fingal County Council, AirNav Ireland and members of those local communities impacted by Dublin Airport operations, including Saint Margaret's, The Ward, Santry, Swords, Malahide, and Portmarnock.

The group meets on a quarterly basis to discuss environmental issues and is provided with updates on noise, air quality, water quality, and current/planned projects. When required or requested, experts attend the meetings to provide an opportunity for detailed discussion on a topic that is deemed to be of particular importance to the group.

DAEWG: March 15, June 14, October 4, December 6.
https://www.dublinairport.com/corporate/environmental-social-governance/community-engagement/dublin-airport-environmental-working-group

8.2.3 Other Engagement Channels

In 2023, face-to-face meetings were held on matters of interest with individual residents and groups. daa also held virtual meetings with individual residents when requested. In addition, daa maintained a fully operated free phoneline and several email channels; continued to update websites to provide accurate, current information; provided regular updates to over 1,000 subscribers to the update service; issued relevant information via press releases and social media; and kept local elected representatives apprised of ongoing issues.

8.3 Complaints Management

8.3.1 Management Procedures

Residents with concerns or comments on aircraft activity have four options to contact Dublin Airport.

Dublin Airport accept complaints about aircraft noise through various channels:

- on WebTrak[1],
- online at Noise Complaints Procedure| Dublin Airport[2], or Dublin Airport Noise Complaint Form[3],
- by phone at 1800 200 034,
- by letter addressed to Noise & Flight Track Monitoring Service, Energy, Environmental & Utilities Department, Asset Care Base (Landside), Dublin Airport.

We have an automated telephone answering service that has allowed integration of the service into our digital complaint management system.

In addition, a new online registration service for complaints is now available and further upgrades will be launched throughout 2024 which will enable the general public to submit multiple comments and complaints as well as streamlining the process for all parties.

Our response system is designed to manage enquiries that are linked to specific aircraft movement events.

[1] Link: https://webtrak.emsbk.com/dub1
[2] Link: https://www.dublinairport.com/corporate/corporate-social-responsibility/noise/complaints-procedure
[3] Link: https://viewpoint-app.emsbk.com/dub10/login

Our live stream noise monitoring and flight tracking website, WebTrak, displays aircraft arriving, departing and overflying Dublin Airport. The system supports the provision of details including the flight number and height of an aircraft and facilitates linking a complaint to an aircraft flight.

Our complaint form and the voice recognition telephone answering service can also link each comment or complaint to a specific aircraft movement event.

This means that we can utilise the specific flight information and its flight track for an investigation and provide the complainant a response to the enquiry.

Our goal is to respond to all enquiries and comments monthly by email. We can only respond if the lodged submission has:

- Asked a relevant question, or
- Raised a noise issue which we can reasonably respond to, and
- Provided email contact information, including for telephone messages.

We cannot respond to comments on aircraft not operating in or out of Dublin Airport.

On any one issue, just one enquiry submission on any of the contact channels is needed to have the complaint considered.

The submission of more than 15 enquiries from an individual, household or Eircode within a month may not receive individual correspondence for each submission. A single correspondence covering the totality of submissions made in one month may be provided.

Efficient query resolution is our goal, so in cases where we cannot provide new information that may enhance understanding on a query we will inform the complainant and pause communication pending informative or relevant updates, though we will continue to log multiples of the same query.

Where this is the case, we will inform the individual of the situation and explain the reasons why. Once we have done so, and have provided all relevant information, we may decline to continue to respond on the same issue.

If we believe that we have provided all of the information that we can with respect to a line of enquiry and the individual remains unsatisfied with our response, an invitation may be extended to visit the airport to engage with relevant teams to gain a deeper insight into specific concerns.

The noise complaint management procedure is documented in the Procedure Policy on Handling Aircraft Noise Complaints. This is available to view on the airport noise webpage.

8.3.2 Complaints Data

In 2023, there were 33,398 aircraft noise complaints lodged by 1,790 individuals. This represents a 1.7% increase in complaints and a 106% increase in number of individuals compared to 2022. The noise complaint number increased due to the opening of the North Runway in August 2022. The number of air transport movement increased by 14% between the two years.

The ANOMS system links individual complaints to a specific aircraft operation. The data indicates 43% and 47% of the complaints were related to aircraft using the North and South Runway respectively. The remainder 10% did not correlate to an aircraft movement or was a general noise complaint which did not state a specific aircraft event that caused the noise annoyance. 51% and 56% of the 1,790 complainants raised concern related to aircraft using the North and South Runway respectively.

The top five complainants who lodged the highest number of complaints accounted for half of the complaints lodged in 2023. An individual lodged over 10,800 noise complaints. Of these, 99% were lodged between January and May 2023.

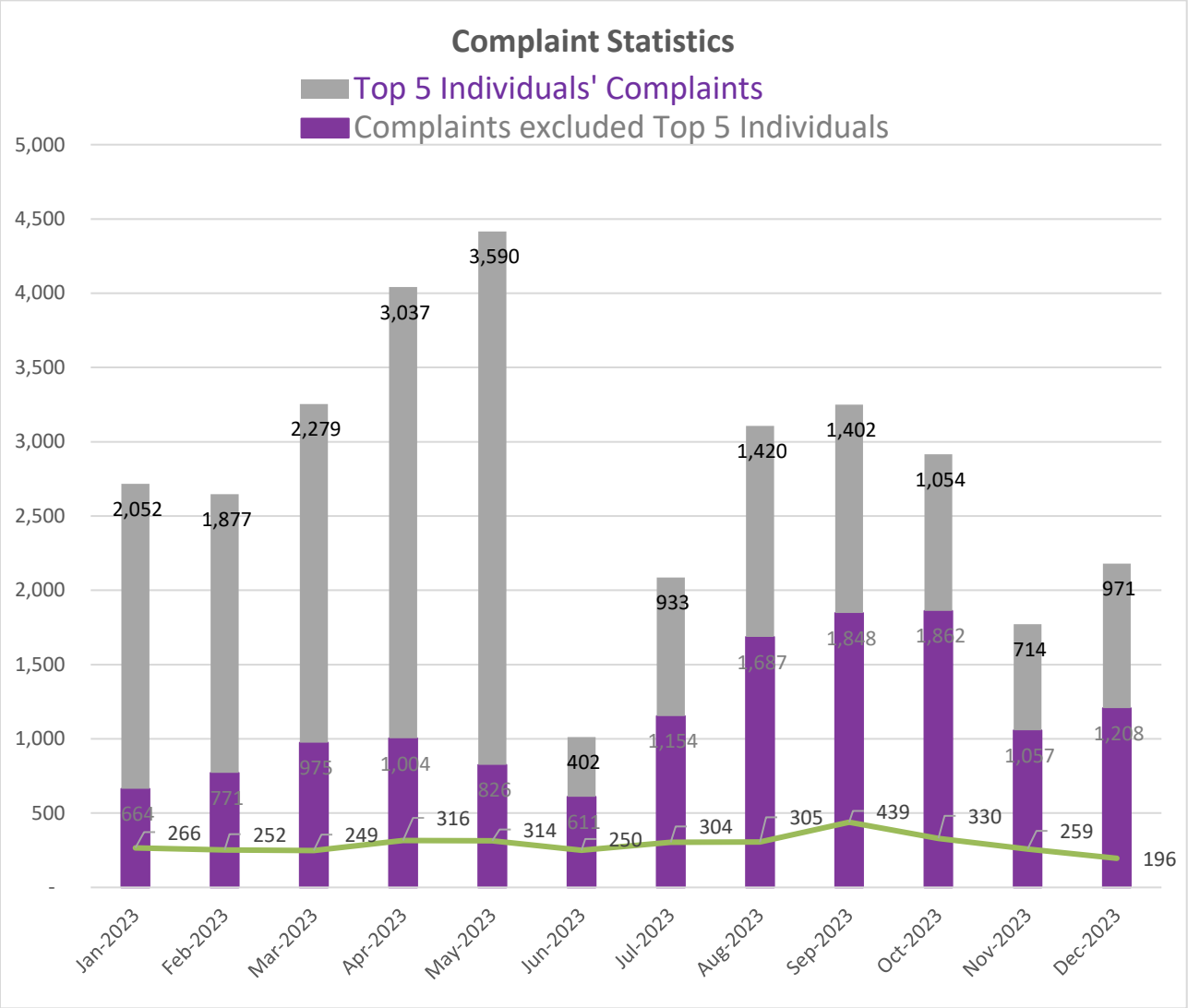


Figure 12 - Complaint Statistics

56% of the 1,790 complainants contacted the airport once only.

As explained in Section 4.5.2, category C/D departure aircraft is required to adhere to the NPR until the end of the corridor below 3,000ft or 4,000ft for South and North Runway respectively. Of the 33,398 complaints lodged in 2023, 6% of these complaints were correlated to non-adherence of NPR movements. Some of these movements were vectored by ATC for safe separation of aircraft in the airspace, weather avoidance etc. 93% of aircraft movements were adhering to the NPR and the IAA-approved Standard Instrument Departure (SID) flightpath below 3,000ft or 4,000ft.

45% of the complaints were related to aircraft movement which operate between 23:00 and 06:59.

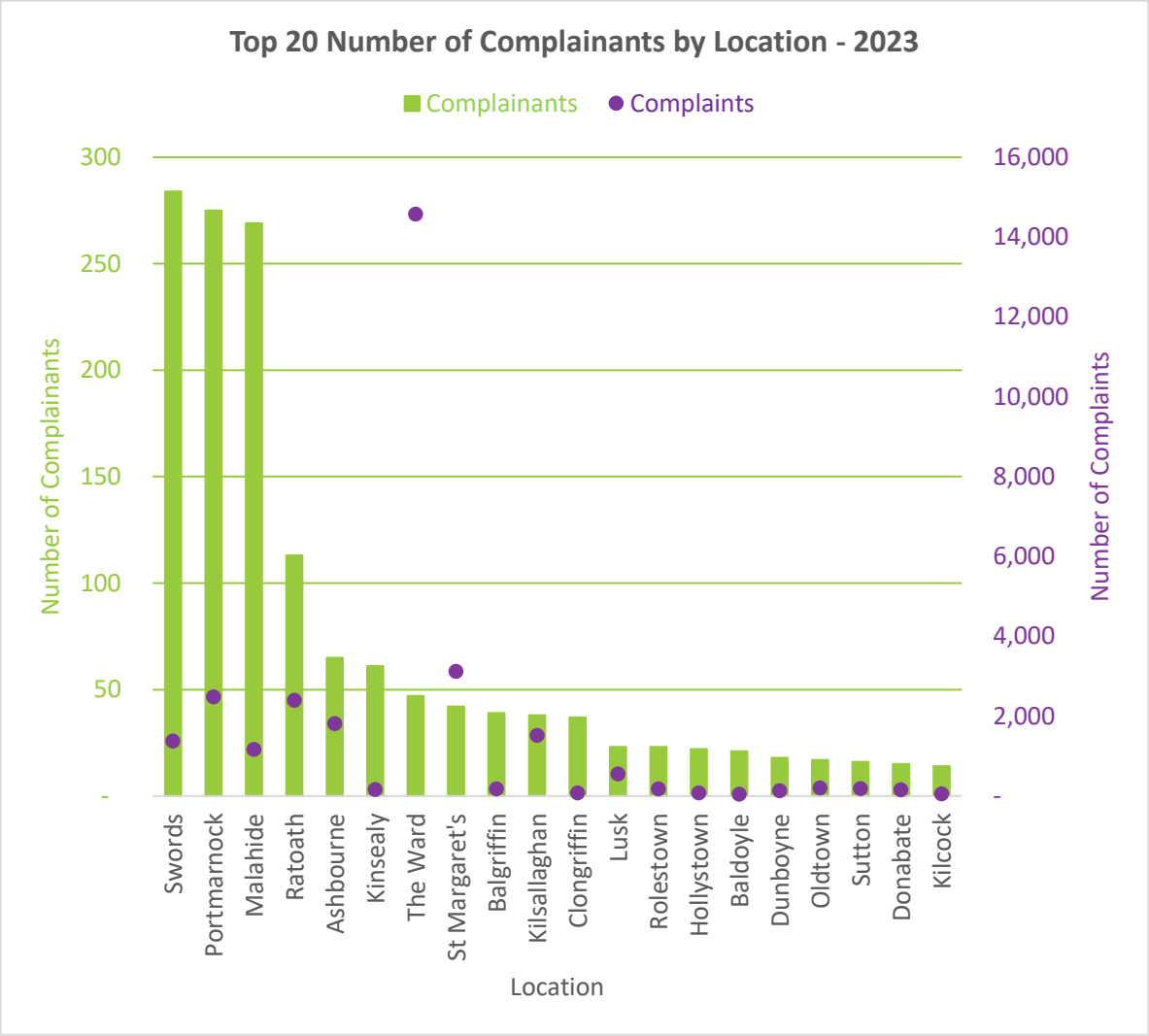


Figure 13 - Top 20 Number of Complainants by Location - 2023

Figure 13 shows the top 20 number of complainants by location and the number of complaints lodged.

9.0 Noise Mitigation Measures – Compliance and Opportunities to Improve

9.1 Roles and Responsibilities

Dublin Airport

Per the Aircraft Noise (Dublin Airport) Regulation Act 2019, appropriate noise mitigation measures must be in place at Dublin Airport, and all airport users must comply with those measures.

Noise and Flight Track Monitoring System Team

The Noise and Flight Track Monitoring System team is a sub-group of the Infrastructure Energy, Environment, and Utilities Management section at Dublin Airport. Its main roles include the following:

- Noise systems management (Airport Noise and Operations Monitoring System [ANOMS], WebTrak community engagement tool, and noise monitoring terminals)
- Flight-track keeping
- Noise complaint handling
- Regulatory and internal reporting of noise-related matters
- Submission of noise-related proposals to AirNav Ireland for the update of the *Aeronautical Information Publication* and related items
- Update of the relevant *Aerodrome Manual* directions related to noise mitigation measures.
- Support to relevant group sections for community engagement purposes

Airport Users

An airport user, including each airline, means a person responsible for the carriage of passengers, mail, or freight by air to or from the airport[4]. By operating into and out of Dublin, all airport users must comply with the information presented in the *Aeronautical Information Publication*.

Irish Aviation Authority – The IAA is the Irish national supervisory authority for civil aviation responsible for the regulation of safety, security and consumer interests.

AirNav Ireland – the Air Navigation Service Provider, is responsible for the safe coordination of air traffic arriving to and departing from Dublin.

Aircraft Noise Competent Authority - The ANCA is the competent authority for the purposes of the Aircraft Noise Regulation.

9.2 The Balanced Approach

ICAO is the International Civil Aviation Organization, a United Nations body set up to facilitation international civil aviation in 1946. It publishes standards and best practice documents including all areas of civil aviation including safety, security and the environment. In general, the EU takes ICAO documents and effectively converts them to European law or directives.

[4] s.2 Aircraft Noise (Dublin Airport) Regulation Act 2019

The Balanced Approach to Airport Noise Management document provides guidance based on four pillars.

Reduction of Noise at Source

Refers to the continual improvement in aircraft technology to reduce noise aircraft emissions, as reflected in ICAO's Noise Certification processes which categorise newer generations of aircraft based on their improving noise performance. These are referred to as Chapter 2, 3, 4 and 14, rated from oldest and noisiest to newest and quietest.

In practice, airport operators can track the noise ratings of aircraft accessing the airport and rate the overall noise performance of the fleet. Incentives such as noise-related landing fees and Fly Quiet can encourage airlines to modernise their fleets and bring the best performing aircraft to the airport, as well as recognising good progress.

Land Use Planning

Land use planning is the domain of the local territorial authority to identify areas impacted by aircraft noise and to ensure that only appropriate development is permitted. The encroachment of noise-sensitive uses particularly residential can result in environmental pressure against airport operation and growth. In practice most airport operators can only try to influence land use planning process and decisions.

Noise insulation schemes are the main proactive initiative that airport operators can undertake to mitigate operational noise and improve indoor amenity of residents and schools.

Noise Abatement Operational Procedures

Operational procedures are used to ensure that aircraft are operated in the quietest manner and with the least impact possible. General procedures include preferential runway use and flight tracks placed over the least populated areas. Arrival procedures include Continuous Descent Operations.

Operating Restrictions

Operating Restrictions are measures that reduce or restrict access to an airport or the capacity of the airport. These can include movement caps, quota count limits and operational curfews.

9.3 The Measures and Objectives

The table below describes the noise mitigation measures and objectives at Dublin Airport. Most of the mitigation measures align with the relevant elements of the International Civil Aviation Organisation's (ICAO) balanced approach elements.

Table 22 – Noise Mitigation Measures and Objectives at Dublin Airport

Item	Ref	Description	Source	ICAO Balanced Approach Element
1*	NS-1	Promote quieter aircraft through incentives such as Fly Quiet programmes.	FCC NAP	Reduction of Noise at Source
2*	NS-2	Work with airline partners to introduce quieter aircraft, particularly at night – including consideration of incentives.	FCC NAP	Reduction of Noise at Source

3	NA-1	Preferential Runway Use	FCC NAP; daa NMP; AIP	Noise Abatement Operating Procedure
4	NA-2	Noise Preferential Routes (NPRs) and Flight-Track Keeping	FCC NAP; daa NMP; AIP	Noise Abatement Operating Procedure
5	NA-3	Noise Abatement Departure Procedures (NADPs) Climb Profile	FCC NAP; daa NMP; AIP	Noise Abatement Operating Procedure
6	NA-4	Visual Approach Jet Aircraft (Category C/D)	FCC NAP	Noise Abatement Operating Procedure
7	NA-5/6	Continuous Climb Operations / Continuous Descent Approach	AirNav Ireland	Noise Abatement Operating Procedure
8	NA-7	Reverse Thrust	FCC NAP; daa NMP; AIP	Noise Abatement Operating Procedure
9	NA-8	Engine Ground Running	FCC NAP; daa NMP; AIP	Noise Abatement Operating Procedure
10	NA-9	Monitor and Report	FCC NAP; daa NMP	Noise Abatement Operating Procedure
11	LU-4	Residential Noise Insulation Scheme (RNIS)	FCC NAP; daa NMP	Land Use and Planning Management
12	LU-6	Voluntary Dwelling Purchase Scheme (VDPS)	NR - RFI 116	Land Use and Planning Management
13	LU-7	Voluntary School Insulation Scheme (SIS)	NR - RFI 116	Land Use and Planning Management
14	CE-1	Stakeholder Engagement	FCC NAP; daa NMP	Monitoring and Community Engagement
15	CE-2	Community Engagement Programme	FCC NAP; daa NMP	Monitoring and Community Engagement
16	CE-3	Noise and Flight Track Monitoring System	FCC NAP; daa NMP	Monitoring and Community Engagement
17	CE-4	Noise Complaint Management System	FCC NAP; daa NMP	Monitoring and Community Engagement
18	PC-1	Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours.	Planning Condition 3(d)	Operating Restriction

** NS-1 and NS-2 are noise mitigation objectives, as outlined in the Fingal County Council Noise Action Plan.*

9.4 Measure and Objective Assessment

	NS-1	NS-2
Short Name	Fleet and Fly Quiet	Incentives
Description	Encourage daa to promote quieter aircraft through incentives such as FlyQuiet programme	Encourage daa to work with airline partners to introduce quieter aircraft, particularly at night – including consideration of incentives
Source	FCC NAP	FCC NAP
Method of Monitoring	Quarterly Fleet Declaration reviews compiled by daa Shared Services Centre. Minuted DAOPG meetings.	Quarterly Fleet Declaration review compiled by daa Shared Services Centre is tracked for metrics and improvement
Other Measurement/ Enforcement	Engagement with Airlines is undertaken via the monthly DAOPG meetings.	Airline performance and general aviation noise metrics are included as standing item on monthly DAOPG meeting held by daa with all relevant Airport Users.
Opinion On Compliance	In Progress	In Progress
Effectiveness/ Performance	Fleet improvement evidenced by increase in A320, 320NEO and 737 MAX movements. 2023 commenced procurement and airline and ANI engagement on Perform Track, ANOMS module dedicated to individual airline performance reporting.	Night-time landing fee now based on Noise (QC) rating. Night QC totals as follows: 2022 ~14269 (31284 ATM) = 0.456 QC/ATM 2023 ~14928 (33507 ATM) = 0.446 QC/ATM
Opportunity for Improvement	Once Perform Track is in place performance improvement plans could expand to a possible future Fly Quiet programme. This could cover fleet modernisation, aircraft chapter or QC, track keeping, and CCO/CDO. Airline engagement and buy-in will be key.	
Consultation Requirement	Airline and AirNav	
Status	On-going	On-going
Expected Implementation	There is no schedule for implementation beyond the launch of Perform Track.	

	NA-1	NA-2	NA-3
Short Name	PRU	NPR Adherence	NADP
Description	Preferential Runway Use	Noise Preferential Routes (NPR's) and Track Keeping	Noise Abatement Departure Procedures (NADP) Climb Profile
Source	NR PP Conditions 3 and 4	FCC NAP; daa NMP; AIP	FCC NAP; daa NMP; AIP
Method of Monitoring	Flight Track Keeping	Flight Track Keeping	Currently there is no known method to automatically track compliance with NADP.
Other Measurement/ Enforcement	ATC		NADP is mandated within the AIP. daa engages with Airport Users on implemented NADP
Opinion On Compliance	Compliance on-going	Continual improvement	Compliance on-going
Effectiveness/ Performance	Runway 16/34 = 0.11% of total movements 10L NR easterly departures = 0.08% of departures 28R NR westerly arrivals = 0.76% of arrivals NR Night-time movements = 0.38% of total annual movements	Systemic improvements were made, and the 2023 data was revised. 2023 SR 99.5% Adherence NR 87.3% Adherence 2024 Q1 and Q2 SR 99.6% Adherence NR 93.1% Adherence	
Opportunity for Improvement		A new ANOMS module, Perform Track, is being implemented. This will help to identify NPR Track Deviations and which of these are under ANI direction and thus excused. Airlines will have access to data in (almost) real time to manage and improve performance.	NADP study to be undertaken. Potential development of ANOMS NADP identification capability.
Consultation Requirement		Consultation with AirNav Ireland and airlines is required to implement software and its use.	Airport users, ANI, daa Operations
Status		Consultation on-going	On-going
Expected Implementation		Q4 2024 to Q1 2025	NADP – Q4 2024 ANOMS development - TBD

	NA-4	NA-5	NA-6
Short Name	Visual Approach	CCO	CDO
Description	Visual Approach Jet Aircraft (Cat C/D)	Continuous Climb Operations	Continuous Descent Operations
Source	FCC NAP	ANI	ANI
Method of Monitoring	ANOMS monitors all approaches but cannot distinguish between visual approach and instrument approach.	ANOMS Flight Track Monitoring	ANOMS Flight Track Monitoring
Other Measurement/ Enforcement		Monitoring, tracking and performance measurement performed by Performance Review division of EUROCONTROL.	Monitoring, tracking and performance measurement performed by Performance Review division of EUROCONTROL.
Opinion On Compliance	On-going	Continual improvement	Continual improvement
Effectiveness/ Performance	ANI informs that this is a rare and unusual occurrence.	EUROCONTROL CCO below FL100 2023: 99.57% 2022: 99.6% Draft CCO Performance- ANOMS 2023: 98% 2022: 98%	EUROCONTROL CDO below FL70 2023: 54.7% 2022: 55.1% Draft CDO Performance- ANOMS 2023: 77% 2022: 78%
Opportunity for Improvement	The NFTMS is unable to distinguish between an instrument or visual approach taken. Complete analysis on potential for use of joining point gate within ANOMS to provide metrics on whether an aircraft has breached the Environmental Noise Corridors. Thereafter, discussions with ANI could identify if vectored to do so.	Potential for development of EIDW-specific CCO/CDO procedures that would better reflect procedures at Dublin Airport. Perform Track ANOMS module to assist airlines	Revise legacy rules with important input from AirNav and the airlines. Include in Perform Track ANOMS Module for monitoring and management.
Consultation Requirement	Consultation with AirNav Ireland required to review potential for implementation.	Consultation with AirNav Ireland on updating CCO rules and promulgation in AIP, and with airlines regarding Perform Track implementation.	Consultation with AirNav Ireland on updating CDO rules and promulgation in AIP, and with airlines regarding Perform Track implementation.
Status	Commenced as part of flight-track keeping improvement programme.	Shadow rule implementation within the ANOMS is completed. Reporting	Shadow rule implementation within the ANOMS is completed. Reporting to

		to commence pending completion of stakeholder consultation and deployment of Perform Track.	commence pending completion of stakeholder consultation and deployment of Perform Track.
Expected Implementation	TBA pending technical feasibility confirmation.	Perform Track: Q4 2024 to Q1 2025	Perform Track: Q4 2024 to Q1 2025

	NA-7	NA-8	NA-9
Description	Reverse Thrust	Engine Ground Running	Monitor and Report
Source	FCC NAP; daa NMP; AIP	FCC NAP; daa NMP; AIP	FCC NAP; daa NMP
Method of Monitoring	Currently no method of monitoring	Monitoring completed by daa Airside Management Unit and compiled in local operations log.	General text detailing NFTMS operations
Other Measurement/ Enforcement		Requirement within Aerodrome Manual Direction 6.10 and mandated within the AIP.	ANOMS, WebTrak daa Noise Management Plan sets out monitoring and reporting requirements and procedures
Opinion On Compliance	Opinion not available at this time	Majorly compliant	Compliant
Effectiveness/ Performance	Investigation of potential monitoring measures remains to be commenced and will form part of wider technical review and assessment of systems.	6 tests 20:00-07:00 (94.8% compliance) 1 test 07:00-09:00 CAT C/D only (99.1% compliance)	The NMT network and data reporting were expanded in Q4 2023 Supplementary Report. Q4 2023 launch of Viewpoint automated voice message transcription system.
Opportunity for Improvement	Investigation of potential monitoring measures to be reviewed as part of wider technical review and assessment of systems.	Introduce standing item in the DAOPG.	Update of complaint handling procedures to detail process for flight-track deviation reporting.
Consultation Requirement	Airport user and internal consultation and engagement with subject matter experts.		Internal consultation
Status	Studies and trials at other airports continue and could potentially be conducted at Dublin.	On going	Initial improvements made to procedures but further work and communication on ad-hoc complaint handling and indirect issue remains.
Expected Implementation	TBA pending technical feasibility confirmation.		Implementation of a smarter, automated approach to high-volume complaints management is in progress with plug-in software modifications to the existing ANOMS. This will provide additional range of options for Communities and Dublin Airport to ensure improved high-volume complaints management. Targeted implementation Q1 2024.

	LU-5	LU-6	LU-7
Short Name	RNIS	VDPS	SIS
Description	Residential Noise Insulation Scheme (RNIS)	Voluntary Dwelling Purchase Scheme (VDPS)	School Insulation Scheme (SIS)
Source	Condition 7 of NR Planning Permission	Condition 6 of NR Planning Permission	Condition 9 of NR Planning Permission
Method of Monitoring	Community Engagement Department, Communications Department	Community Engagement Department, Communications Department	Community Engagement Department, Communications Department
Other Measurement/ Enforcement			
Opinion On Compliance	Compliant	Compliant	Compliant
Effectiveness/ Performance	Phase 3 was started in 2023 and continues in 2024. Homes completed in 2023 165/203 eligible	Purchase offers were made to a larger number of homes than the minimum requirement. 10 of 38 eligible properties have benefited from the scheme to date. Scheme availability extended from required 1 year to 3 years.	All 3 eligible schools have received treatment.
Opportunity for Improvement	A review is required in 2024. daa has already identified homes and brought these into the scheme in advance of the review. A new graphical information package for RNIS with homes, scheme boundaries and noise contours, is being launched in 2024.	A review is required in 2024 but the 2023 contours do not bring any new homes into the scheme. Negotiations with other homeowners continues.	A review is required in 2024 but the 2023 contours do not bring any new schools into the scheme. Negotiations are being held with a fourth school that is just outside the current contour.
Consultation Requirement	Inform ANCA		Inform ANCA
Status	Proceeding		Proceeding
Expected Implementation	2024 - 2025		2024-2025

	CE-1	CE-2
Description	Stakeholder Engagement	Community Engagement Programme
Source	FCC NAP; daa NMP;	FCC NAP; daa NMP;
Method of Monitoring	Community Engagement Department, Communications Department	Community Engagement Department, Communications Department
Other Measurement/ Enforcement	DAOPG/Scheduled Meetings	Condition 28 of NR Planning Permission.
Opinion On Compliance	Compliant	Compliant
Effectiveness/ Performance	DAOPG well established and attended. Noise included as standing item.	CLG, DAEWG and drop-in clinic forums well established and attended.
	Airline and ANI engagement is on-going and new software modules are being implemented to help manage and improve Track Adherence.	Two main forums meet regularly. Reporting and the website are being upgraded.
Opportunity for Improvement	The Perform Track module will help both airlines and AirNav improve flight track adherence and noise reduction practices including CCO and CDO.	Website upgrades that include location specific overflight and noise data. A new portal on the daa website called Insightfull will provide Eircode specific operational and noise information
Consultation Requirement	Airline and AirNav	N/A
Status	In process	In process
Expected Implementation	2024/2025	2025

	CE-3	CE-4
Short Name	NFTMS	Complaints
Description	Noise & Flight Track Monitoring System	Noise Complaint Management Systems
Source	FCC NAP; daa NMP;	FCC NAP; daa NMP;
Method of Monitoring	Collation of data on aircraft movements and the measurement of resultant noise	Process and respond to all aviation related noise complaints in a timely manner
Other Measurement/ Enforcement		WebTrak, various
Opinion On Compliance	Compliant	
Effectiveness/ Performance	NMT actual data validated the Modelled 2023 contour data. This provides assurance that the modelled contours appropriately represent the noise situation. The NMT network and data reporting including Track Adherence were expanded in Q4 2023 Report Supplement.	33,398 complaints logged from 1,790 complainants on NFTMS. All complaints has been recorded and investigated. 6% of these complaints were correlated to non-adherence of NPR movements. Indirect complaints submitted via daa Customer Experience Portal, Airport Operations Control centre, and the reception desk remain problematic to effectively track. Response times generally in line with ambition. System upgrades for submitting complaints. Backlog of complaints was cleared by early 2024. Several teething problems with registering and data collection were fixed.
Opportunity for Improvement	Planning daily ANOMS data curation to be implemented from 1/1/2024 to improve alignment with daa AOS traffic database. New NMT in 2024 will bring total to 25 permanent locations. New ANOMS module on Perform Track	Perform Track will assist with investigations of NPR Track Deviations as ANI will be able to mark events as “vectored” if pilots were instructed to deviate
Consultation Requirement	Airlines, ANI and ANCA	Airnav
Status	On going	In progress
Expected Implementation	2024	Q4 2024 to Q1 2025

	PC-1	PC-2
Short Name	C3d or NR Night Closure	C5 or Night movement limit
Description	Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours	The average number of night time aircraft movements at the airport shall not exceed 65/night (between 2300 hours and 0700 hours) when measured over the 92 day modelling period
Source	Planning Condition 3(d)	Planning Condition 5
Method of Monitoring	N/A	N/A
Other Measurement/ Enforcement	N/A	N/A
Opinion On Compliance	Currently the subject of a High Court action.	There is currently a live planning application which relates to the night-time use of the runway system at Dublin Airport (Ref. F20A/0668; ABP Ref. F20A/0668), on which daa expect a decision from An Bord Pleanála in the near future.
Effectiveness/ Performance	Night-time movements on the North Runway were 898 movements or 0.38% of total annual movements.	N/A This condition is subject to ongoing High Court Proceedings brought by daa bearing the Record Number: 2023 / 916 JR in which Fingal County Council is the Respondent.

9.5 NR Planning Conditions

The relevant planning conditions are tabulated below with cross references to items in the above Noise Mitigation Measures and other reports. As all that have references are addressed here or elsewhere, these will not be directly addressed further.

Table 23 – NR Planning Conditions

Condition	Short Title	Status or Reference in this Report
1	Documents Reference	Subject of separate “Condition 10” report to FCC
2	Development Period	N/A
3	Mode of Operations (Noise Preferential Runways)	Item 4 (NA-2) and 18 (PC1) in Noise Mitigation Measures
4	Cross Runway use	Item 4 (NA-2) in Noise Mitigation Measures
5	Night-time movement limit	Item 19 (PC2) in Noise Mitigation Measures

6	School Insulation Scheme (SIS)	Item 13 (LU-7) in Noise Mitigation Measures
7	Residential Noise Insulation Scheme (RNIS)	Item 11 (LU-4) in Noise Mitigation Measures
8	SIS and RNIS implementation	Items 11 and 13 (LU-4 and 7) in Noise Mitigation Measures
9	Voluntary Dwelling Purchase Scheme (VDPS)	Item 12 (LU-6) in Noise Mitigation Measures
10		Subject of separate "Condition 10" report to FCC and below:
10a	Noise and Flight Track Monitoring	Items 4 (NA-2) and 16 (CE-3) in Noise Mitigation Measures
10b	Annual Noise Contour report	Item 4 (NA-2) in Noise Mitigation Measures
10c	Quarterly Noise and Flight Track Monitoring Reports	Item 16 (CE-3) in Noise Mitigation Measures
10d	Noise Impact and Mitigation Revaluation (2 yearly)	Subject of separate report and Items 11 and 13 (LU-4 and 7) in Noise Mitigation Measures
11	Relocation of Ground Run site	Completed 2022

9.6 Operating Restrictions and Flight Procedures

Item 4a of Section 19 refers to "particulars of failures (if any) to comply with operating restrictions due to changes in flight procedures."

According to the Airport Noise Regulation Act (s29 and s30) a Noise Mitigation Measure is a condition that reduces the impact of a noise problem at the airport. An Operating Restriction is a condition that limits access to or reduces the operational capacity at the airport.

This means that of the Noise Mitigation Measures tabulated in Section 9.2, only Items 18 and 19 (Planning Conditions 3d and 5, respectively) are Operating Restrictions.

In general, changes to flight procedures such as those covered in Section 4 may provide some reduction in noise but are not Operating Restrictions. Condition 3d which halts access to the North Runway at night (except under certain circumstances) is not a change to a flight procedure and is indeed an Operating Restriction.

Section 19.4.d refers to "operating restrictions (including aircraft flying off track without being directed to do so by the Irish Aviation Authority)." The Noise Preferential Routes, as described above in Section 4 of this report, are Departure Procedures and not Operating Restrictions.

9.7 Further Details on Projects

Table 24 – Opportunities for Improvement on Projects

Short Name	Opportunities for Improvement
Perform Track	The ANOMS module will provide detailed information of flights that deviate from NPR, CDO and CCO, with near live flight track and altitude profile to assist both airlines and AirNav Ireland to improve performance.
Maploom	This is a graphical information interface initially proposed to provide access to the various Noise Insulation, Purchase and future Grant schemes, both internally for daa and with public facing components.
Reporting Improvements	New Monthly Operations and Complaints reports and Quarterly Noise and Flight Track Keeping reports have been launched and further improvements and response to public and regulator comments will be implemented.
Insightfull	This ANOMS module will provide a website portal to provide postcode-based information to residents regarding operational data including flight numbers, heights, noise levels, change as well as more detailed explanatory information, videos and graphics. Realtime information dashboard will be available on operations, noise monitoring, runway use, track compliance and complaints.
Complaints	The above modules will be able to assist and improve response to complaints, investigations of NPR Track Deviations including improved and streamlined input from AirNav Ireland.
Fly Quiet Programme	Yet to take more concrete shape, a Fly Quiet programme or other means of airline comparison will depend on the advances in information available from the new ANOMS modules which also provide the aviation stakeholders with timely data that can assist with improving track adherence, CDO and CCO.

10.0 Glossary of Terms

A/B category aircraft	Category of smaller aircraft, containing propeller aircraft, turboprop aircraft, Whisperjets and other small general aviation aircraft powered by jets engines.
AIP	Aeronautical Information Publication
ANCA	Aircraft Noise Competent Authority
ANI	AirNav Ireland, the Irish ANSP
ANSP	Air Navigation Service Provider
ANOMS	Advanced Noise & Track Monitoring System
ATSU	Air Traffic Service Unit
ATC	Air Traffic Control
CAR	Civil Aviation Regulator
C/D category aircraft	Jet aircraft, such as Airbus and Boeing aircraft, Bombardier Canadair Regional Jet series, business jets, and Embraer aircraft
CCO	Continuous Climb Operation
CDA	Continuous Descent Approach (same as CDO)
CDO	Continuous Descent Operation (same as CDA)
Clearway	End part of the runway
CLG	Community Liaison Group
daa	Dublin airport authority
DAOPG	Dublin Airport Operations Planning Group
DAEWG	Dublin Airport Environmental Working Group
dB	Decibels, a unit of sound pressure
Environmental Corridor	Same as a Noise Preferential Route (NPR)
EIDW	Dublin International Airport, Dublin, Ireland
FCC NAP	Fingal County Council Noise Action Plan
FL	Flight Level
HR	Hour
IAA	Irish Aviation Authority
ILS	Instrument Landing System
ICAO	International Civil Aviation Organisation
KT	Knots
LA_{Eq}	Equivalent average sound level
LA_{max}	Maximum value the A-weighted sound pressure level reaches during a measurement period.
LAP	Local Area Plan
L_{den}	Weighted average of the yearly individual noise level during daytime, evening, and night-time periods
L_{night}	Weighted average of the yearly individual noise level specifically during the night-time period (23:00 – 07:00)
LOC	Localiser approach (non-precision runway approach aid)
MTOW	Maximum Take-Off Weight
NA	Number Above metric for single events. N60 is the number of events over Lmax 60 dBA.

NAP	Noise Action Plan developed by Fingal County Council
NADP	Noise Abatement Departure Procedure
NFTMS	Noise and Flight Track Monitoring System
NMP	Noise Management Plan
NMT	Noise Monitoring Terminal
NPR	Noise Preferential Route
NR	North Runway
PP	Planning Permission
QC	Quota Count
Reverse thrust	Using the engine of the aircraft for braking after landing on the runway.
RNIS	Residential Noise Insulation Scheme
SEL	Sound Exposure Level is the total energy contained in a noise event
SID	Standard Instrument Departure
SR	South Runway
STAR	Standard Terminal Arrival Route
Vector	ATC approved deviation from NPR or route. It is a heading instructed by ATC for direct routing of aircraft, weather avoidance (thunderstorm) or safe separation of aircraft.

11.0 Appendices

App 1 NR Planning Permission Conditions 3 and 4

Condition 3

On completion of construction of the runway hereby permitted, the runways at the airport shall be operated in accordance with the mode of operation – Option 7b – as detailed in the Environmental Impact Statement Addendum, Section 16 as received by the planning authority on the 9th day of August, 2005 and shall provide that –

(a) the parallel runways (10R-28L and 10L-28R) shall be used in preference to the cross runway, 16-34,

(b) when winds are westerly, Runway 28L shall be preferred for arriving aircraft. Either Runway 28L or 28R shall be used for departing aircraft as determined by air traffic control,

(c) when winds are easterly, either Runway 10L or 10R as determined by air traffic control shall be preferred for arriving aircraft. Runway 10R shall be preferred for departing aircraft, and

(d) Runway 10L-28R shall not be used for take-off or landing between 2300 hours and 0700 hours, except in cases of safety, maintenance considerations, exceptional air traffic conditions, adverse weather, technical faults in air traffic control systems or declared emergencies at other airports.

Condition 4

The crosswind runway (16-34) shall be restricted to essential occasional use on completion of the new runway in accordance with Objective DA03 of the Fingal County Development Plan, 2005-2011. 'Essential' use shall be interpreted as use when required by international regulations for safety reasons.

App 2 Arrivals and Departures by Hour

Hour	Arrivals	Departures
0	3.4%	0.4%
1	2.0%	0.2%
2	0.5%	0.4%
3	0.4%	0.1%
4	2.3%	0.3%
5	1.4%	1.2%
6	1.3%	7.9%
7	3.0%	9.2%
8	5.1%	5.9%
9	5.9%	5.2%
10	5.7%	5.2%
11	6.1%	6.0%
12	6.3%	6.0%
13	5.8%	6.7%
14	5.6%	5.7%
15	4.6%	6.1%
16	5.3%	5.7%
17	5.6%	6.1%
18	5.3%	6.0%
19	4.5%	5.2%
20	4.5%	4.3%
21	4.8%	3.4%
22	5.7%	2.0%
23	4.9%	0.8%
Total	100%	100%

App 3 Origin and Destinations of Flights

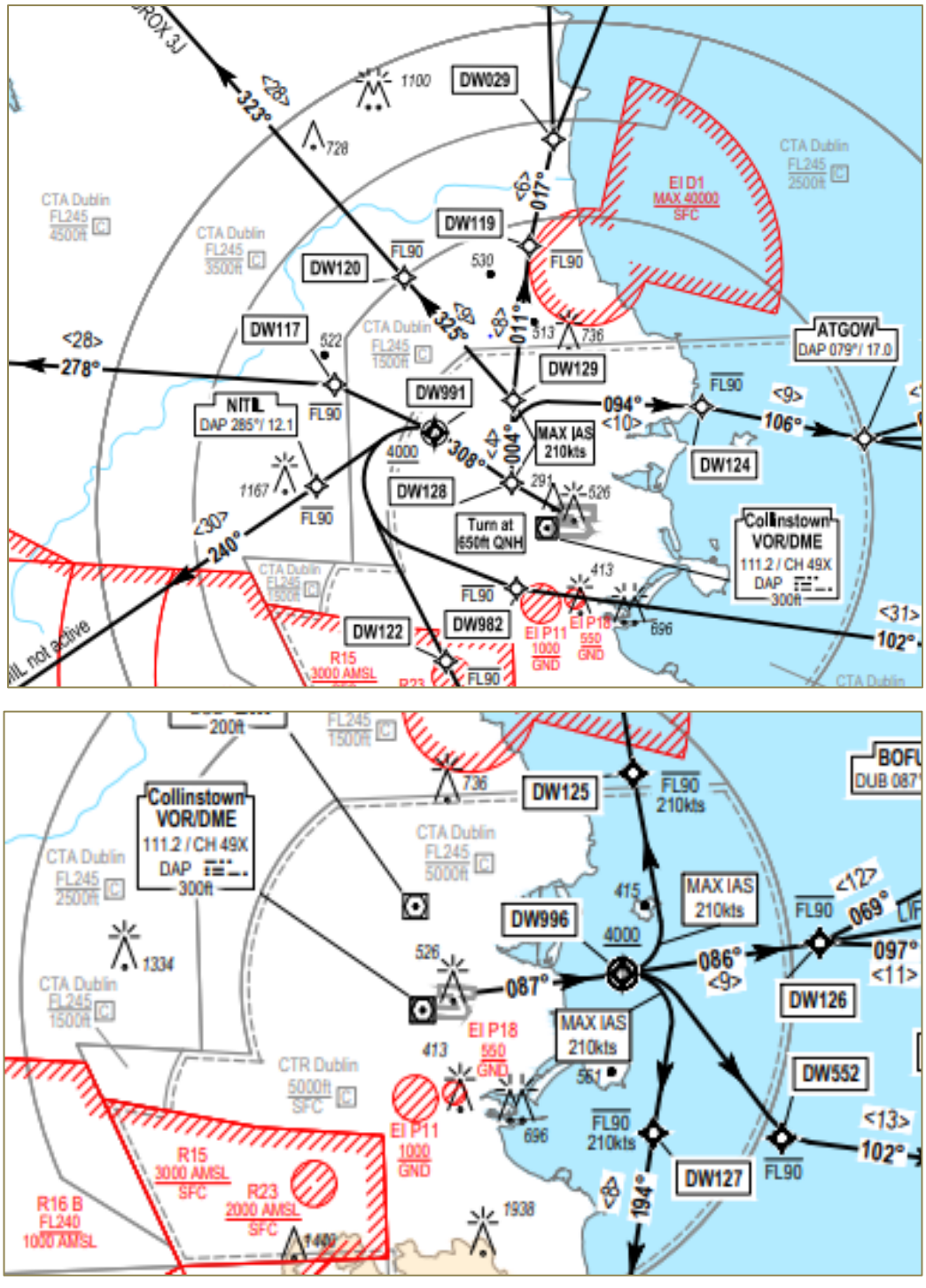
Rank	Origin of Arrival	Percentage of Arrivals	Destination of Departure	Percentage of Departures
1	EGLL	5.03%	EGLL	5.04%
2	EHAM	3.73%	EHAM	3.74%
3	EGKK	3.52%	EGKK	3.52%
4	EGCC	3.43%	EGCC	3.42%
5	EGBB	3.23%	EGBB	2.82%
6	EGPH	2.76%	EGSS	2.76%
7	EGSS	2.75%	EGPH	2.76%
8	LFPG	2.40%	LFPG	2.46%
9	EGPF	2.08%	EGPF	2.08%
10	LEMG	1.77%	EDDF	1.79%
11	EGGP	1.67%	LEMG	1.78%
12	EGGD	1.66%	EGGD	1.67%
13	LEBL	1.65%	EGGP	1.65%
14	LPPT	1.63%	LPPT	1.64%
15	EDDF	1.58%	LEBL	1.63%
16	LPFR	1.54%	LPFR	1.53%
17	EBBR	1.45%	LEMD	1.43%
18	LEMD	1.42%	EBBR	1.40%
19	EGLC	1.38%	EGLC	1.38%
20	EGNM	1.31%	EGNM	1.33%
21	EGGW	1.15%	EGGW	1.16%
22	GCRR	1.12%	GCRR	1.15%
23	EDDB	1.09%	LIRF	1.10%
24	LIRF	1.09%	EDDB	1.09%
25	LSZH	1.07%	LSZH	1.07%
26	EDDM	1.05%	EDDM	1.04%
27	KJFK	0.92%	EGNX	1.04%
28	EGNT	0.89%	KORD	1.04%
29	KBOS	0.87%	KIAD	1.04%
30	KORD	0.86%	KJFK	0.92%

App 4 SID and NPR

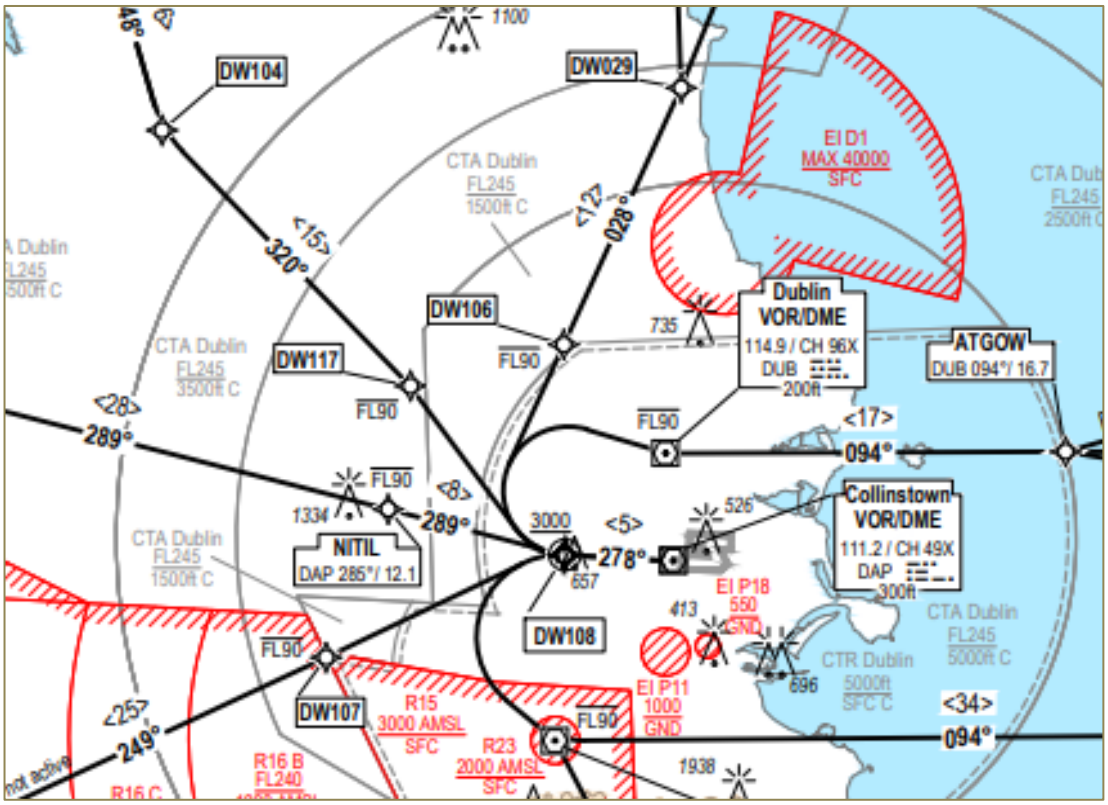
Standard Instrument Departures

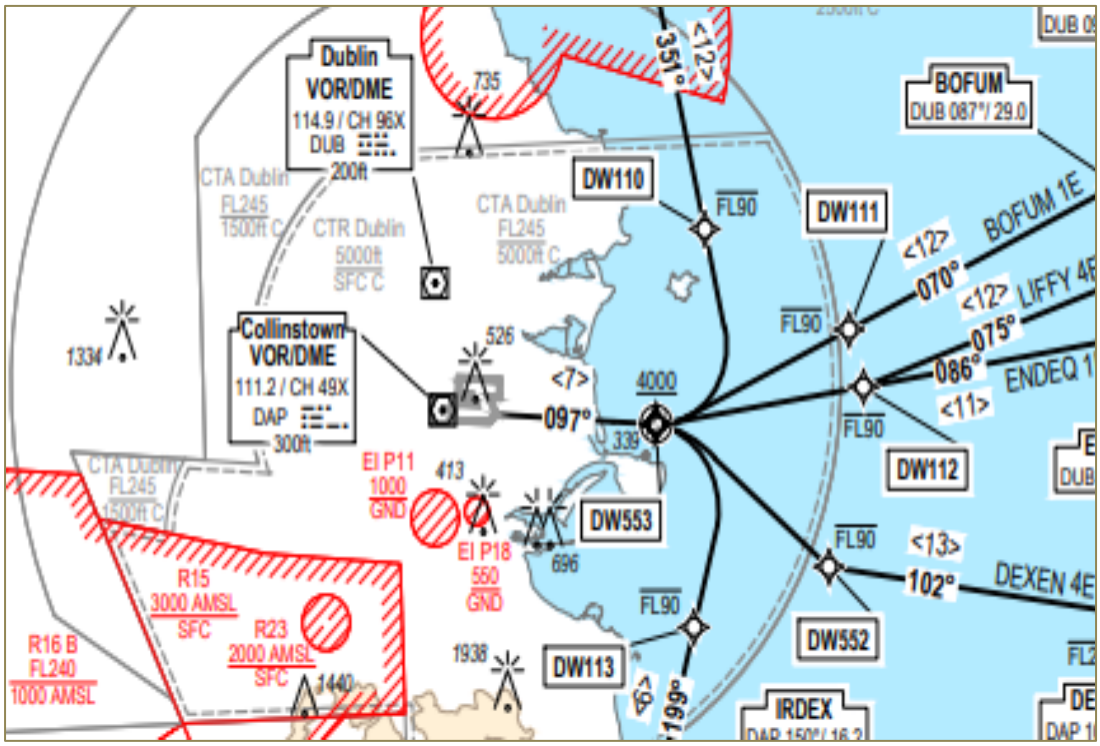
Depending on the departure runway and destination, departing aircraft follow routes called Standard Instrument Departures (SID). SIDs allow aircraft to safely depart an airspace following a pre-defined route. SID's are developed and published in AirNav Ireland's document the Aeronatical Information Package (AIP).

North Runway – Category C and D SID



South Runway – Category C and D SID



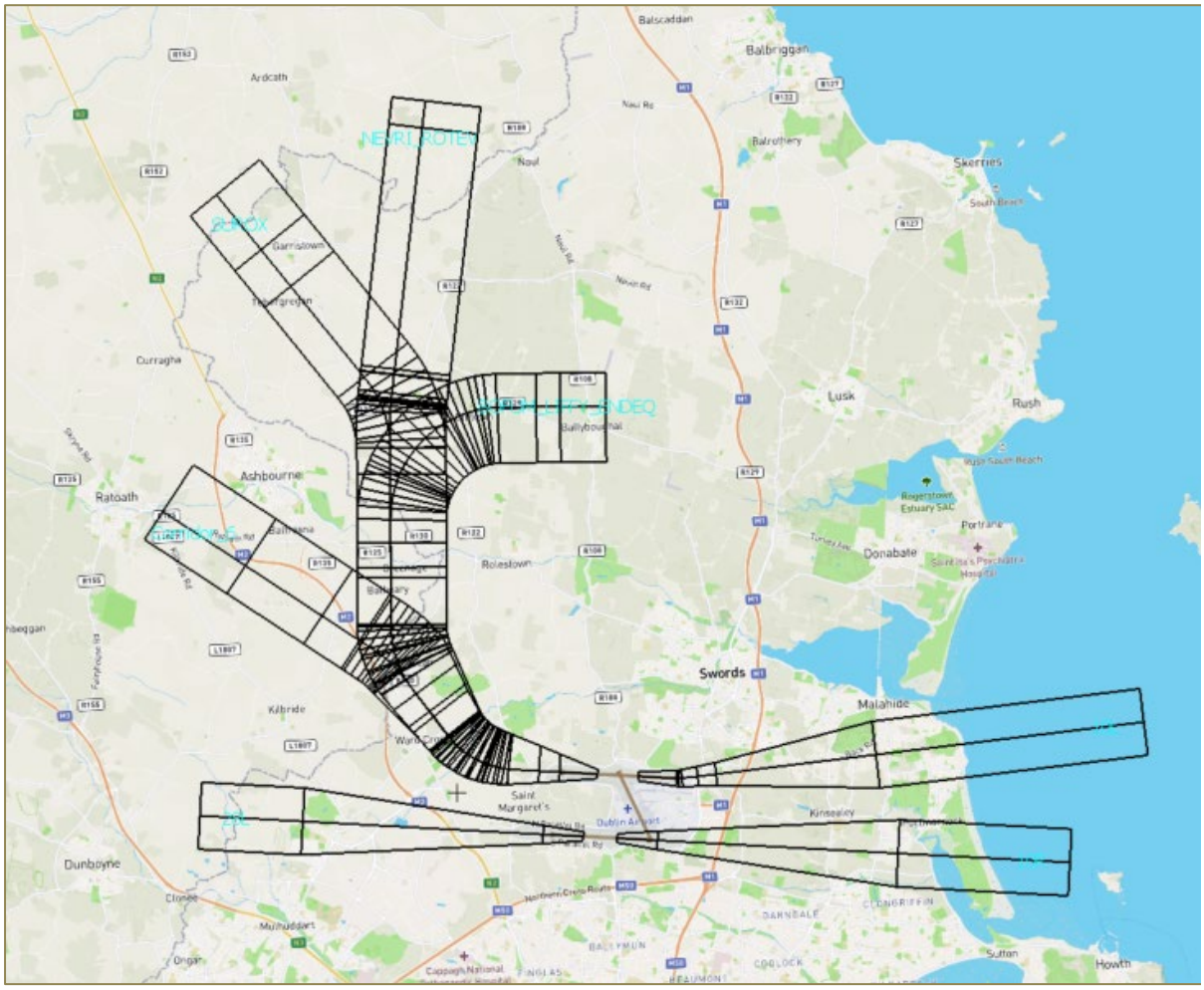


Noise Preferential Routes

Noise Preferential Routes (NPR) are passageways or corridors defined to either side of each SID path. An NPR is also called an Environmental Corridor. These only apply to the departures of jet (Category C and D) aircraft which are the larger aircraft.

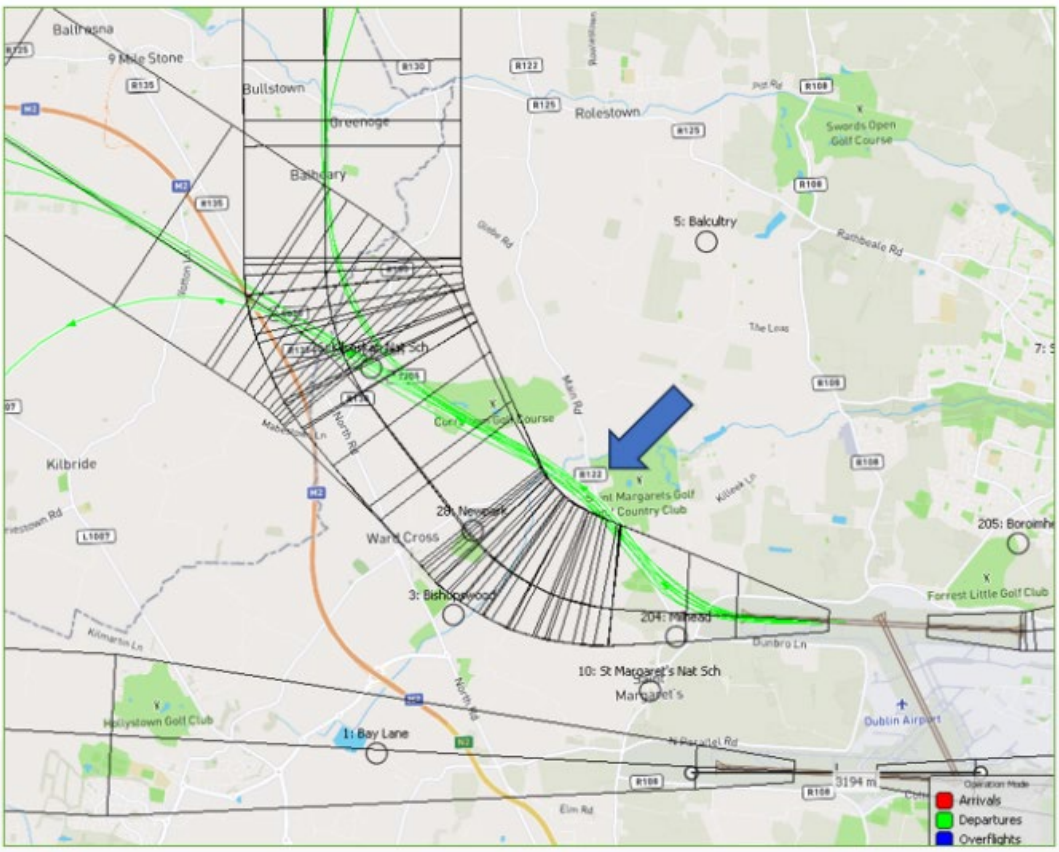
From South Runway, aircraft should not deviate from the NPR until reaching an altitude of 3,000ft. From North Runway, aircraft should not deviate from the NPR until reaching an altitude of 4,000ft.

NPR from each end of the parallel NR and SR

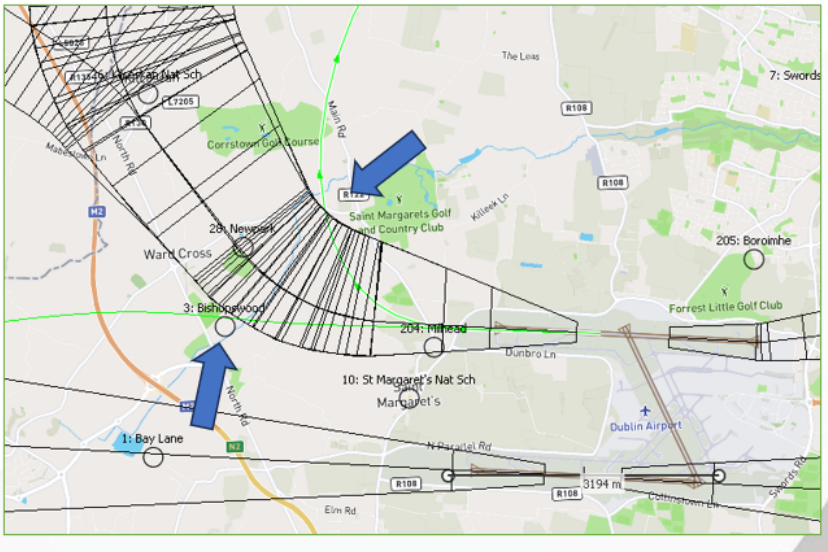


NPR Deviation Examples

Track NPR Deviation Examples – North Runway (RW 28R)

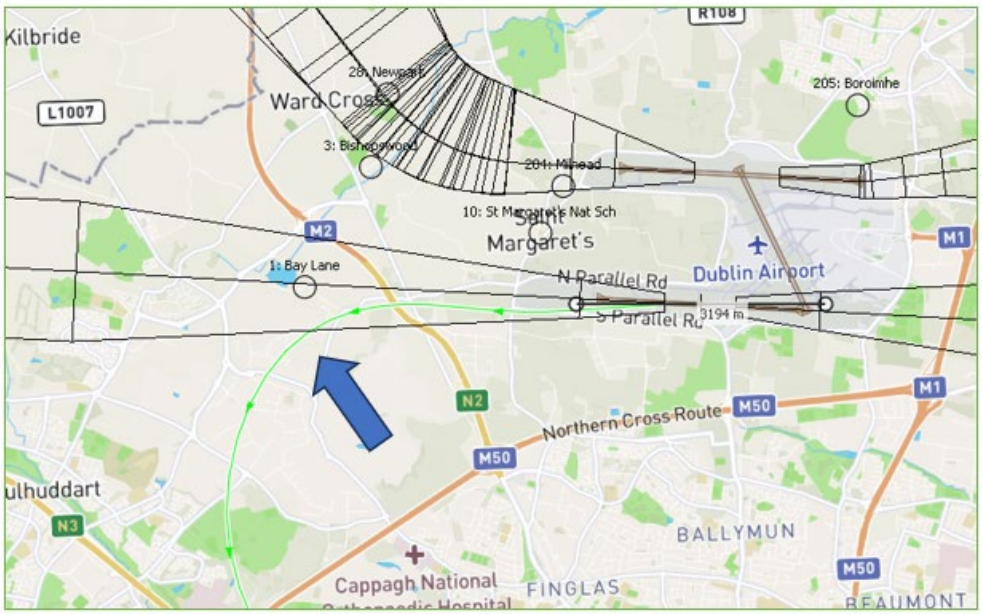


The above diagram displays a number flights which exited the North Runway NPR and then re-entered the NPR. This is a known issue for a small percentage of aircraft and Dublin Airport is working with the airlines and the aircraft manufacturer on resolving it.



The above diagram displays two different departing flights which exited the North Runway NPR before they would have reached 4,000 ft altitude.

Track NPR Deviation Examples – South Runway

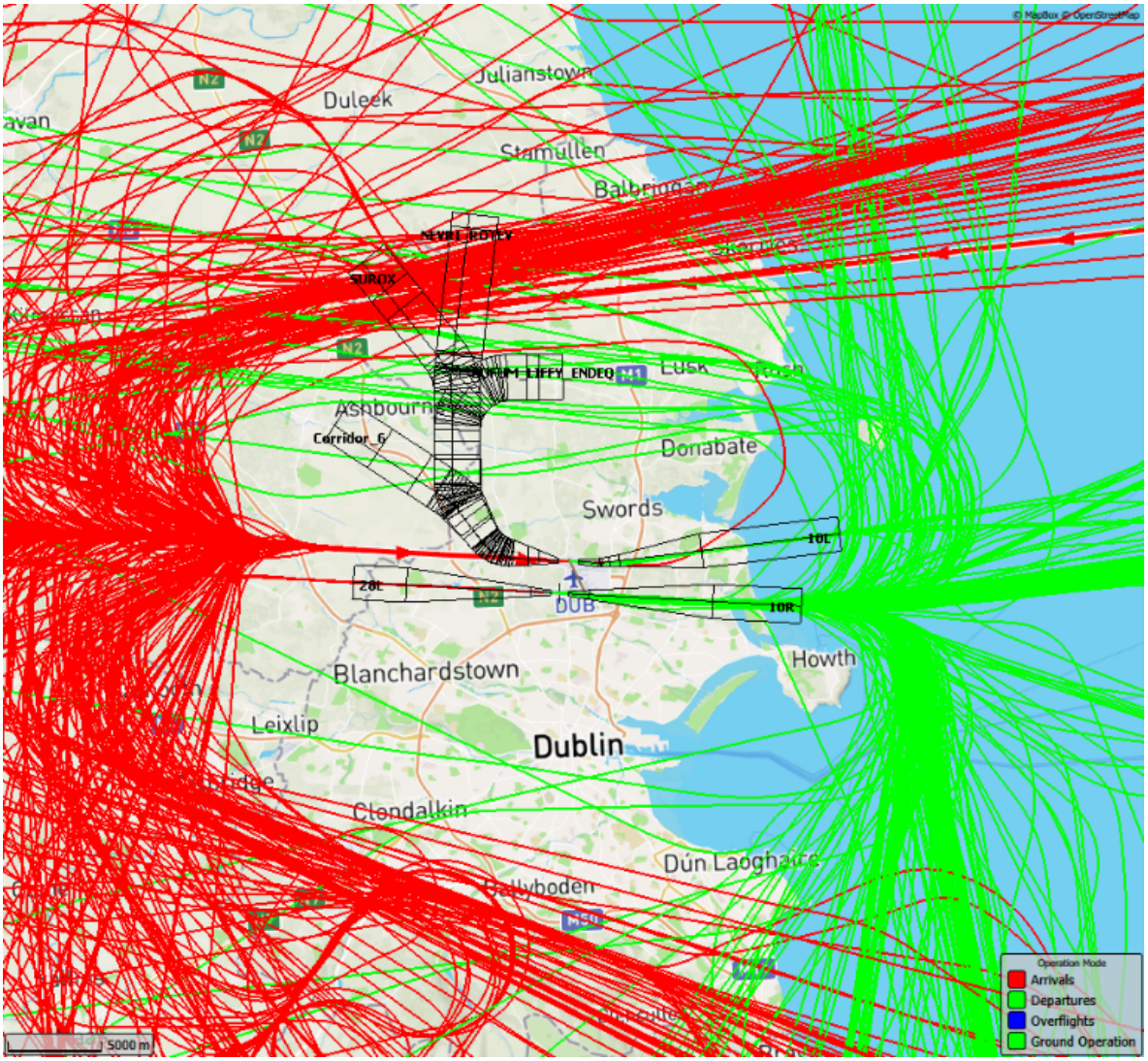


A jet aircraft departed the South Runway heading west and then turned left (southward) not far after the M2 motorway before reaching 3,000ft.

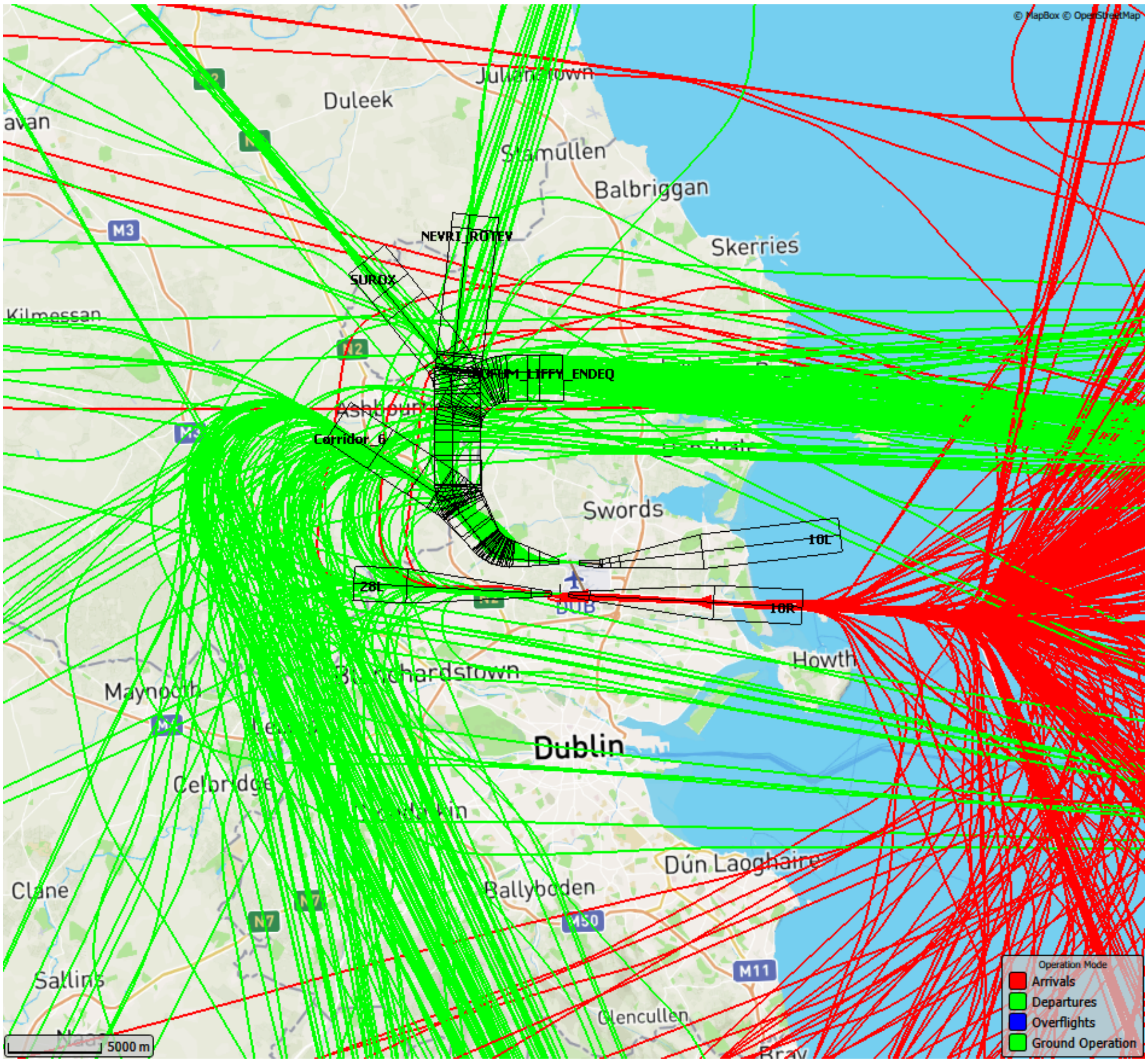
This jet aircraft departed the South Runway heading east. It deviated from the NPR for a short distance and then returned to the corridor, to continue on the correct path.

App 5 Departure Tracks with NPR

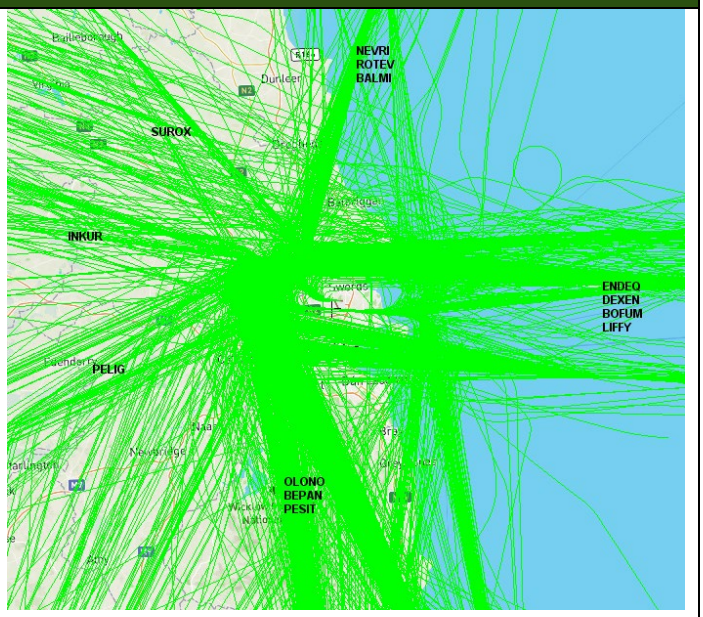
Category C and D (jet) aircraft easterly arrival and departure tracks with environmental corridors (NPRs) on one busy day 7 September 2023.



Category C and D (jet) aircraft westerly arrival and departure tracks with environmental corridors (NPRs) on one busy day 28 September 2023.

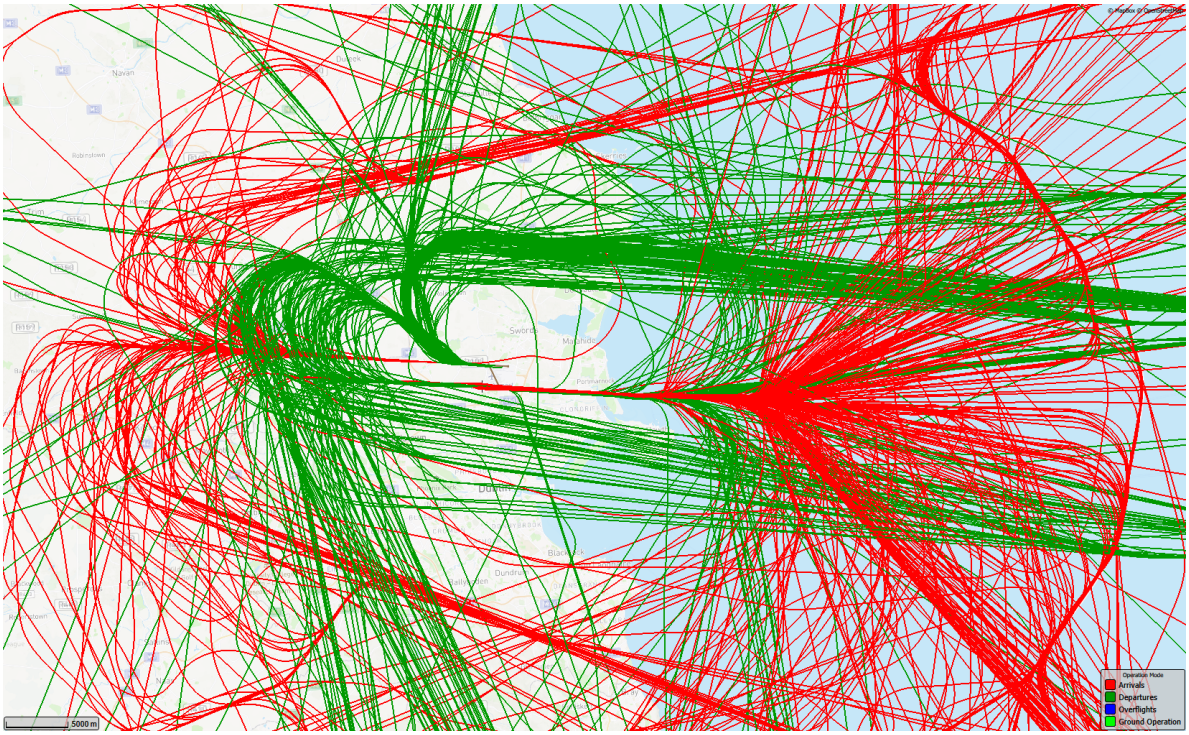

© MapBox © OpenStreetMap
Duleek
Stamullen
Balbriggan
Skerries
Kilmessan
NEVRI_ROTEV
SUROX
LIFFY_ENDEQ
Corridor_6
Swords
10L
28L
10R
DUB
Howth
Maynooth
Dublin
Celbridge
Dún Laoghaire
Clane
Ballyboden
Sallins
Glencullen
Bray
M3
M2
M11
M50
N7
5000 m
Operation Mode
Arrivals
Departures
Overflights
Ground Operation

App 6 Departure Route Usage

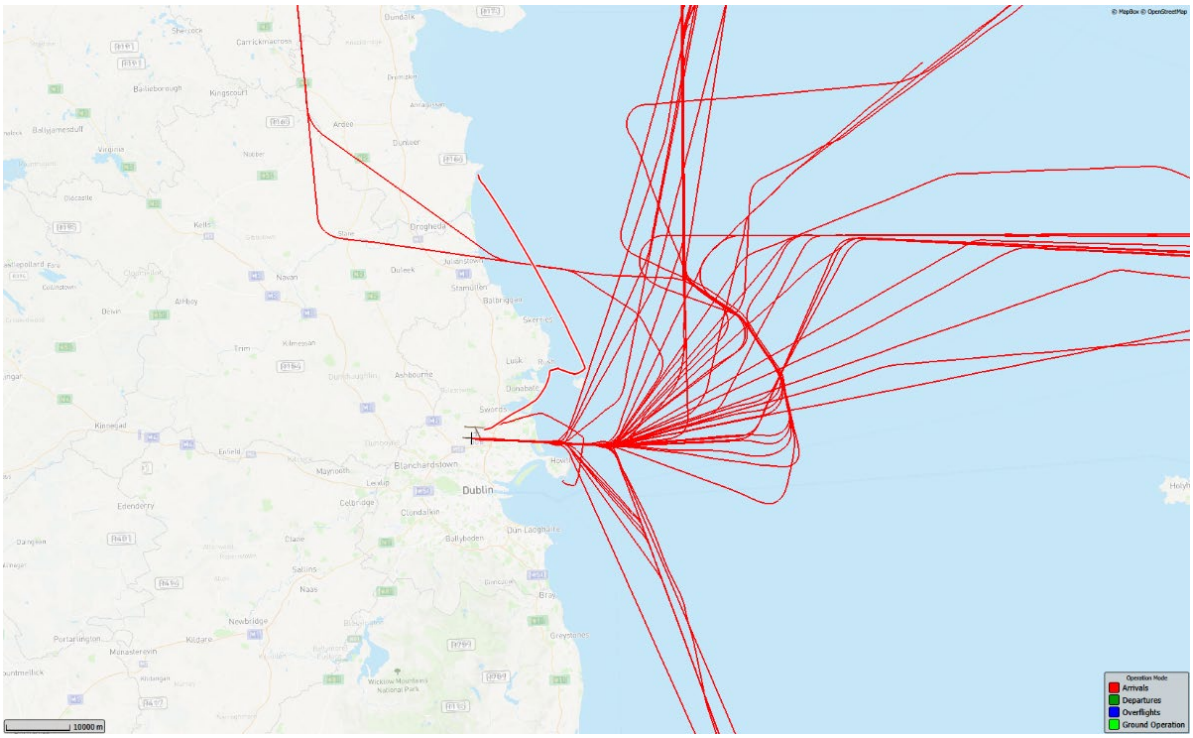
Rank	Departure Route	Percentage of Departures	Map
1	ENDEQ	37.29%	
2	PESIT	14.44%	
3	BEPAN	8.41%	
4	DEXEN	7.31%	
5	ROTEV	7.26%	
6	BOFUM	6.52%	
7	INKUR	4.05%	
8	SUROX	3.35%	
9	OLONO	3.19%	
10	PELIG	2.88%	
11	TE10R	2.45%	
12	NEVRI	0.94%	
13	TE28L	0.69%	
14	ROTAV	0.45%	
15	BAMLI	0.43%	
16	ABIDO	0.33%	
17	LIFFY	0.003%	
18	TE16B	0.003%	
19	RC28R	0.002%	
20	TE28R	0.001%	

App 7 Busiest Day Tracks

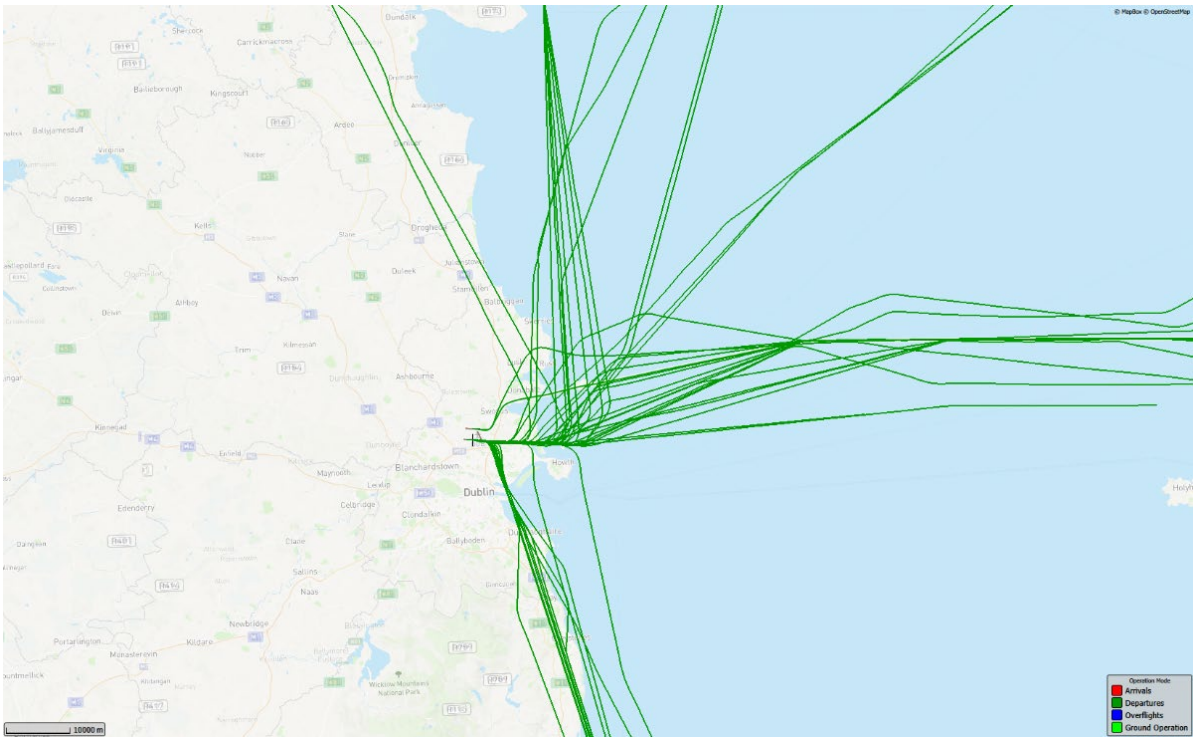
Tracks of Busiest Day Overall – 24th September



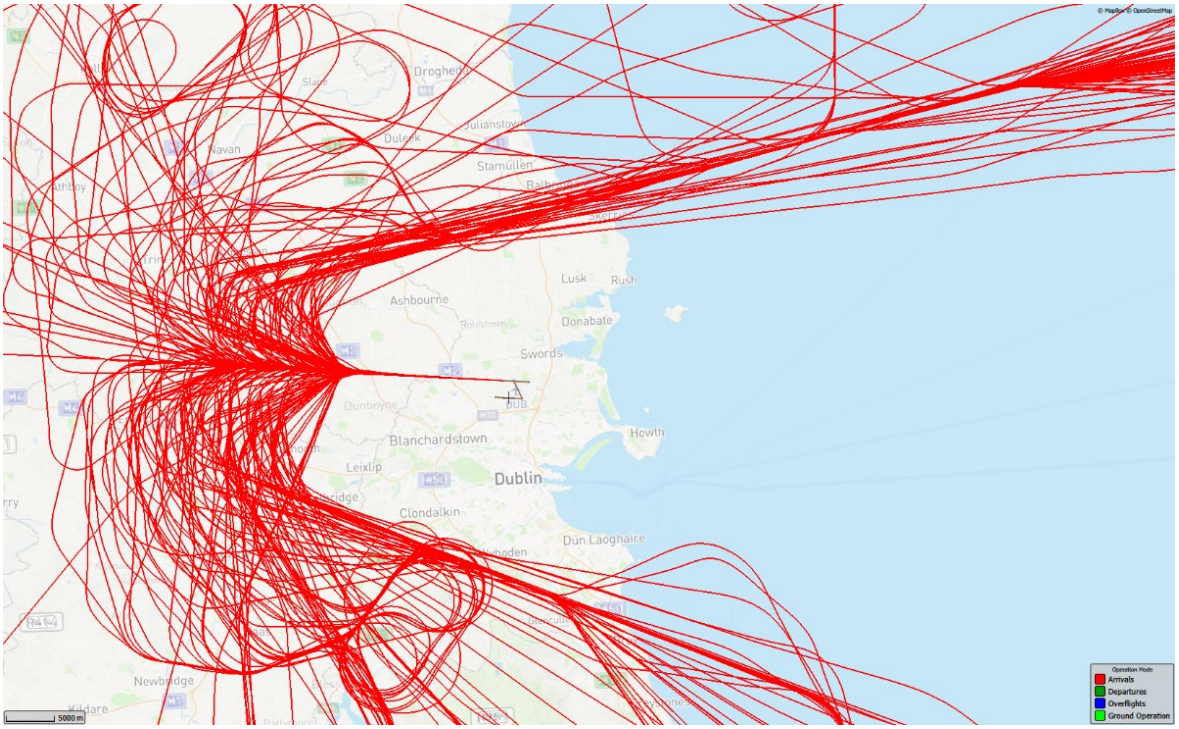
CAT AB Busiest Day Arrivals 29th June



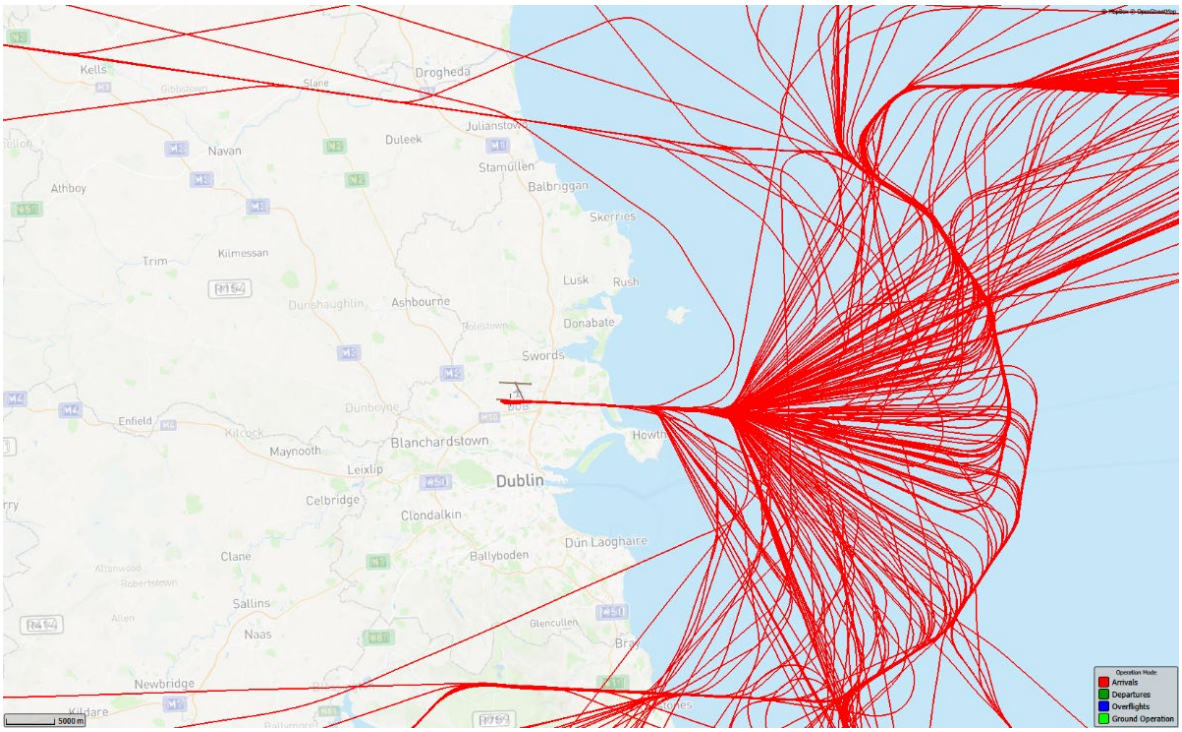
CAT AB Busiest Day Departures 07th September 2023



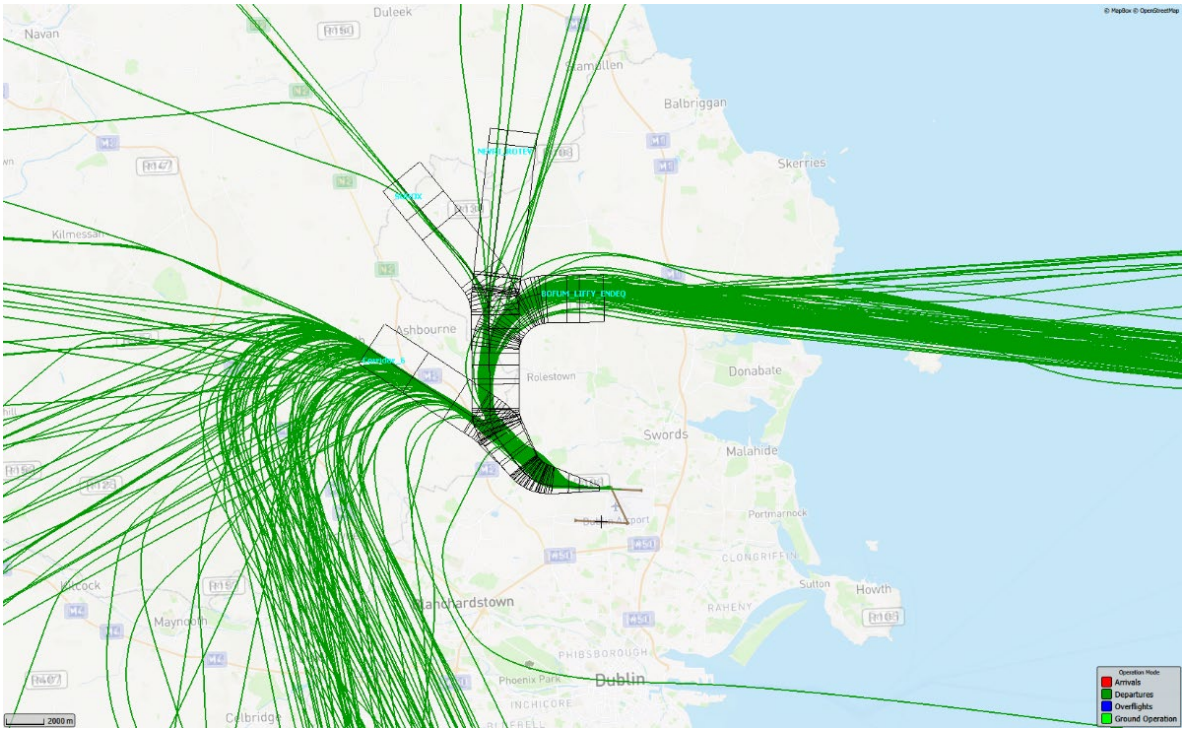
CAT CD Busiest Day Arrivals at Dublin Airport on Easterly Operations – 07th September 2023



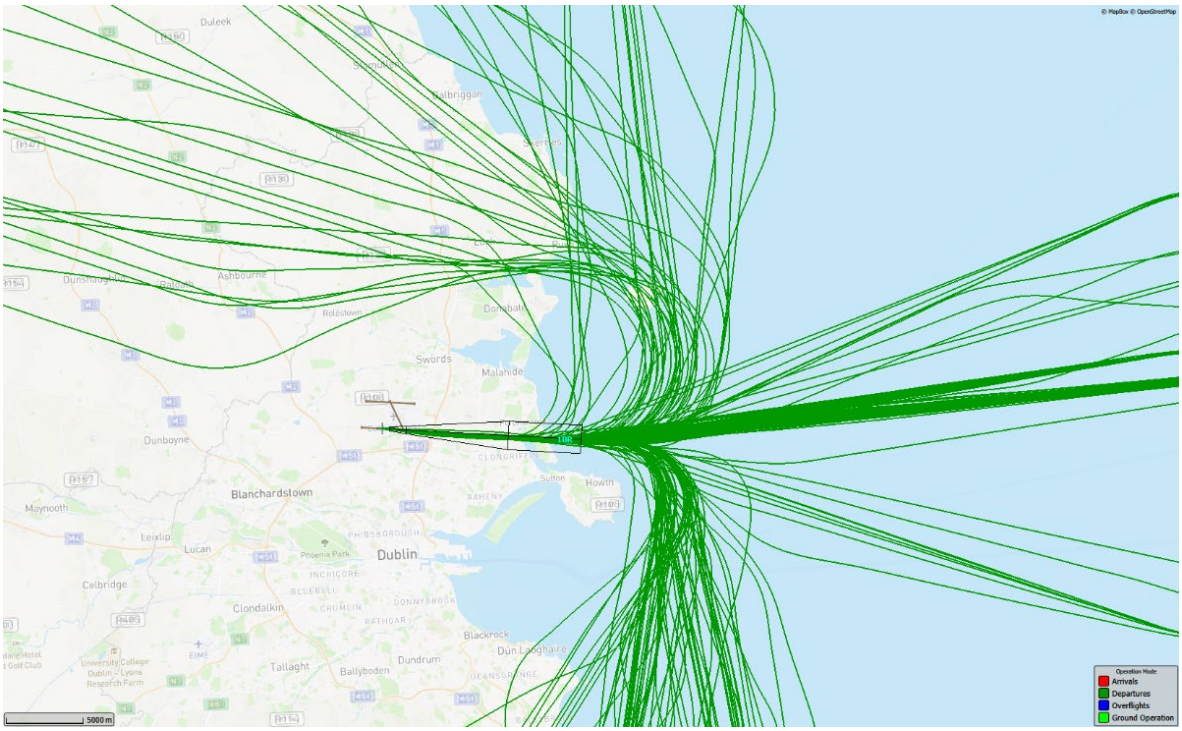
CAT CD Busiest Day Arrivals at Dublin Airport on Westerly operations – 22nd September 2023



CAT CD Busiest Day Departures at Dublin Airport on Westerly Operations – 07th October 2023



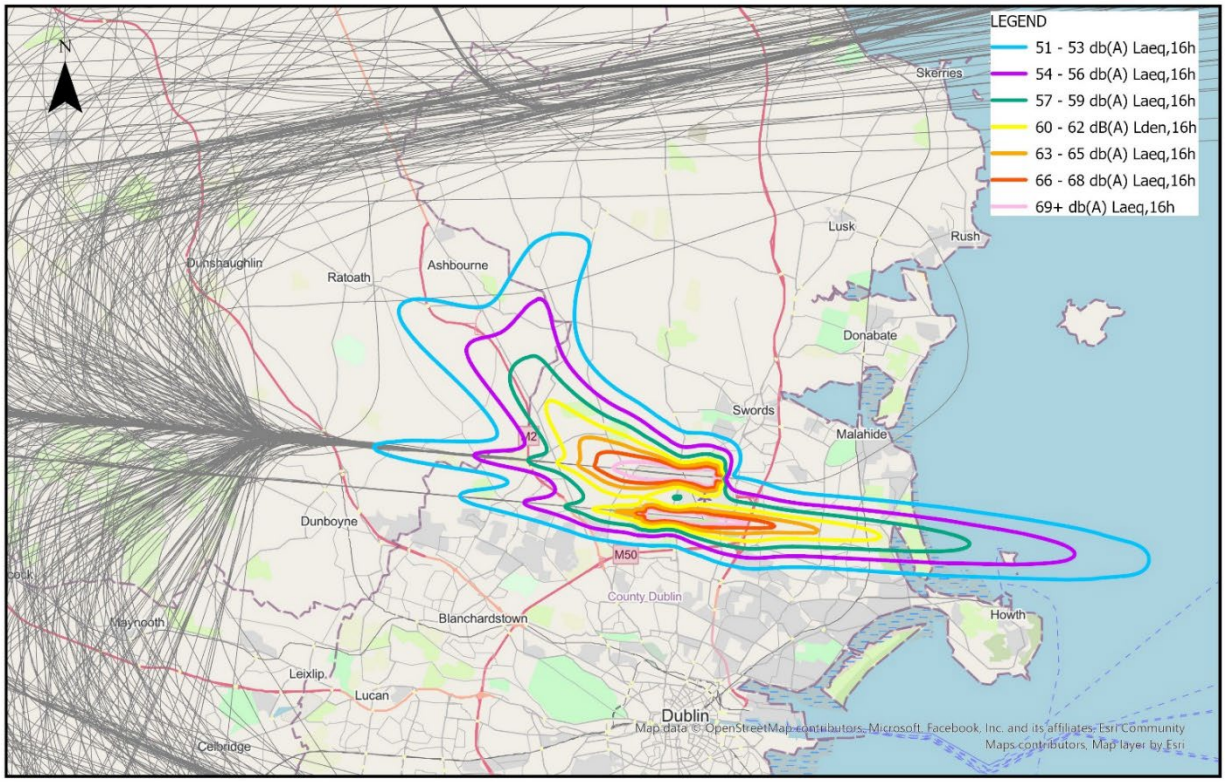
CAT AB Busiest Day Departures at Dublin Airport for Easterly Operations 18th August 2023



App 8 Busiest Day Overlays

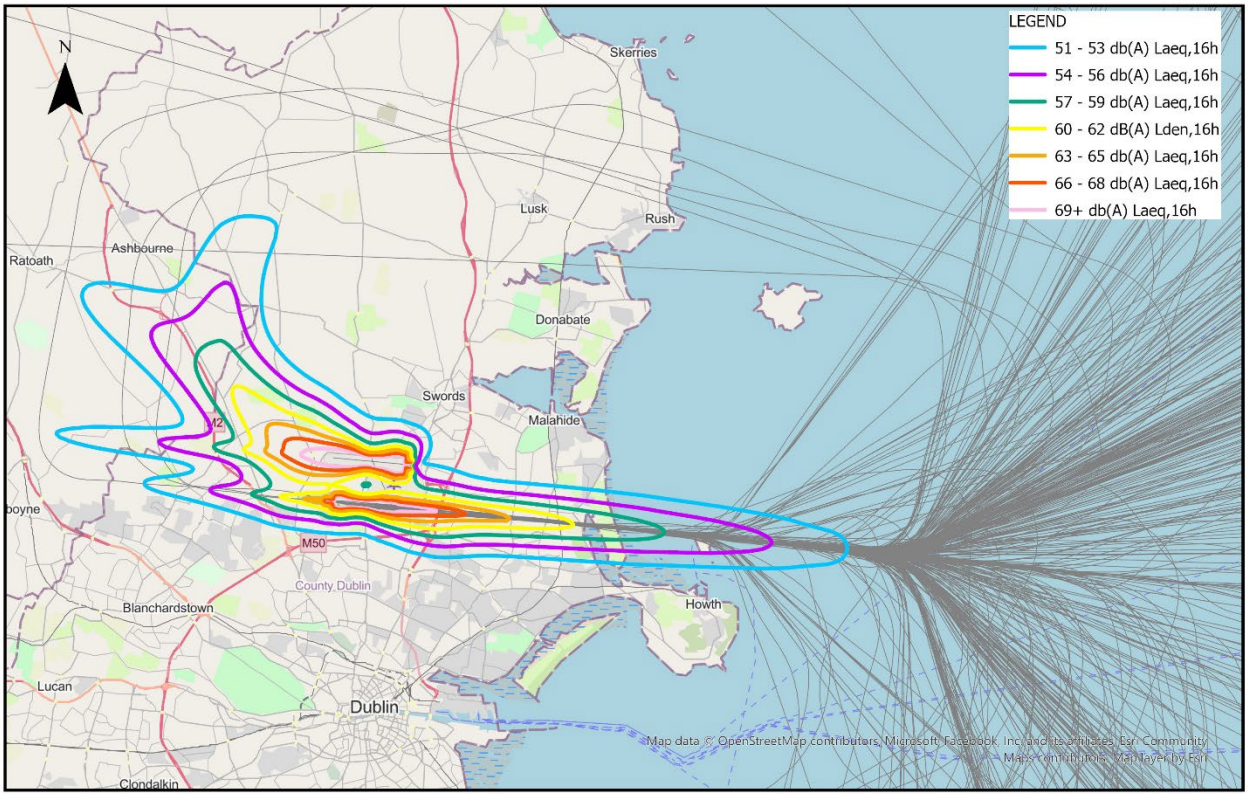
This Appendix show the annual aircraft noise contours of Summer Day, Summer Night, Lden and Lnight against the typical busiest day aircraft tracks. The distribution of aircraft operations is related directly to the modelled noise impact.

Busiest Day Arrivals on Easterly and Summer Day contour



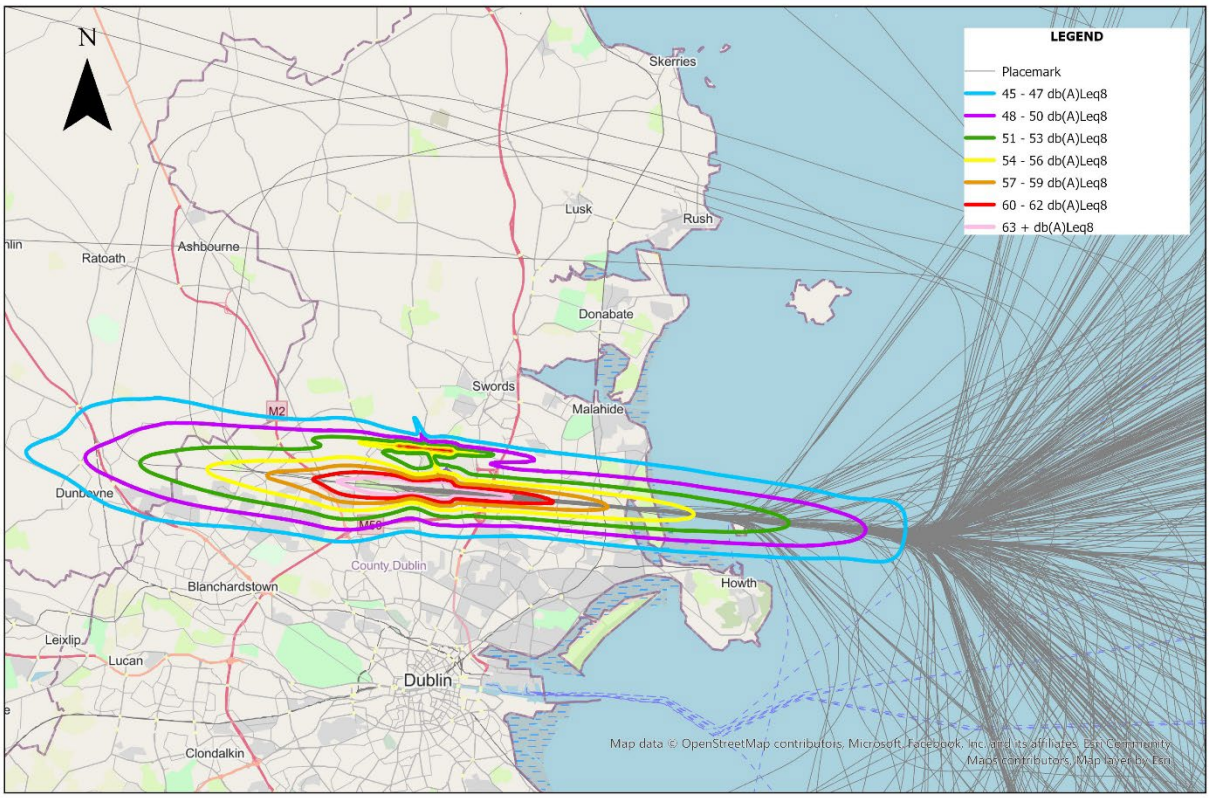
A11429_2023_Actual_Summer_LAeq16_v2_Act_Modal - Day

Busiest Day Arrivals on Westerly and Summer Day contour



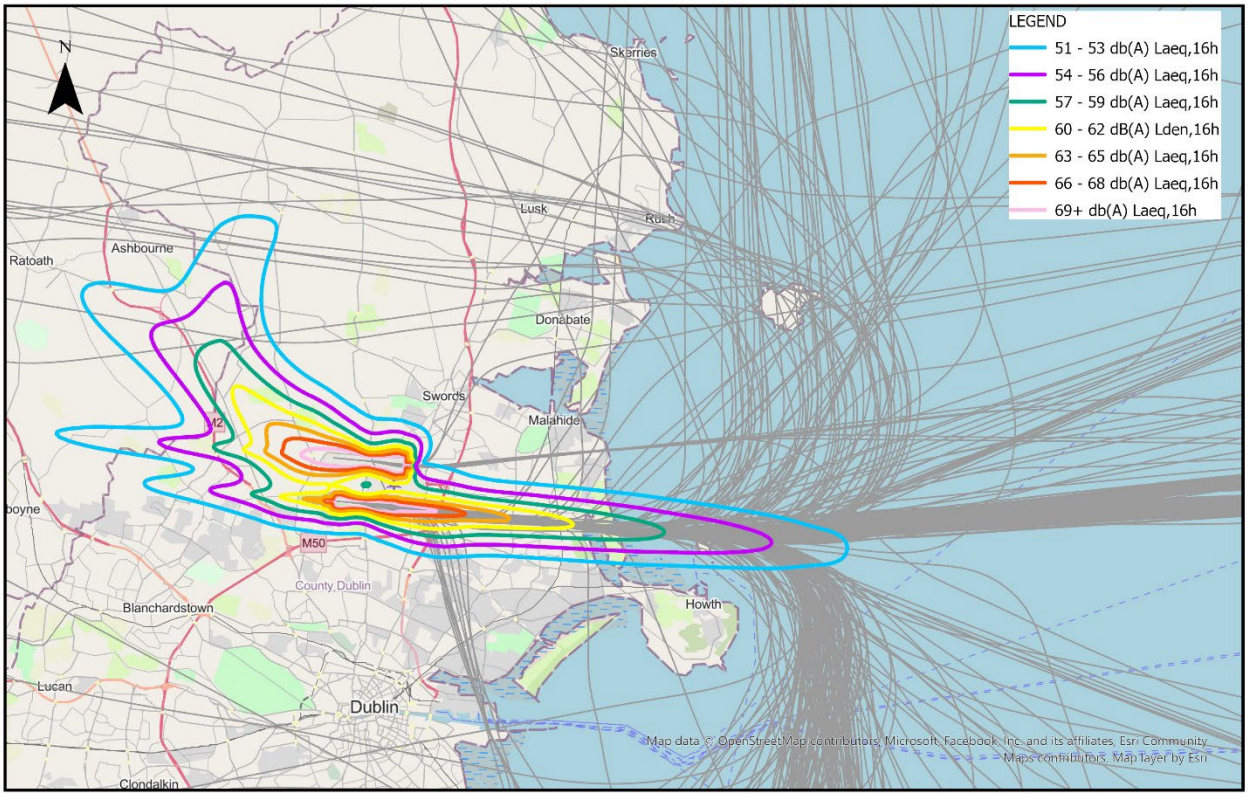
A11429_2023_Actual_Summer_LAeq16_v2_Act_Modal - Day

Busiest Day Arrivals on Westerly and Summer Night contour



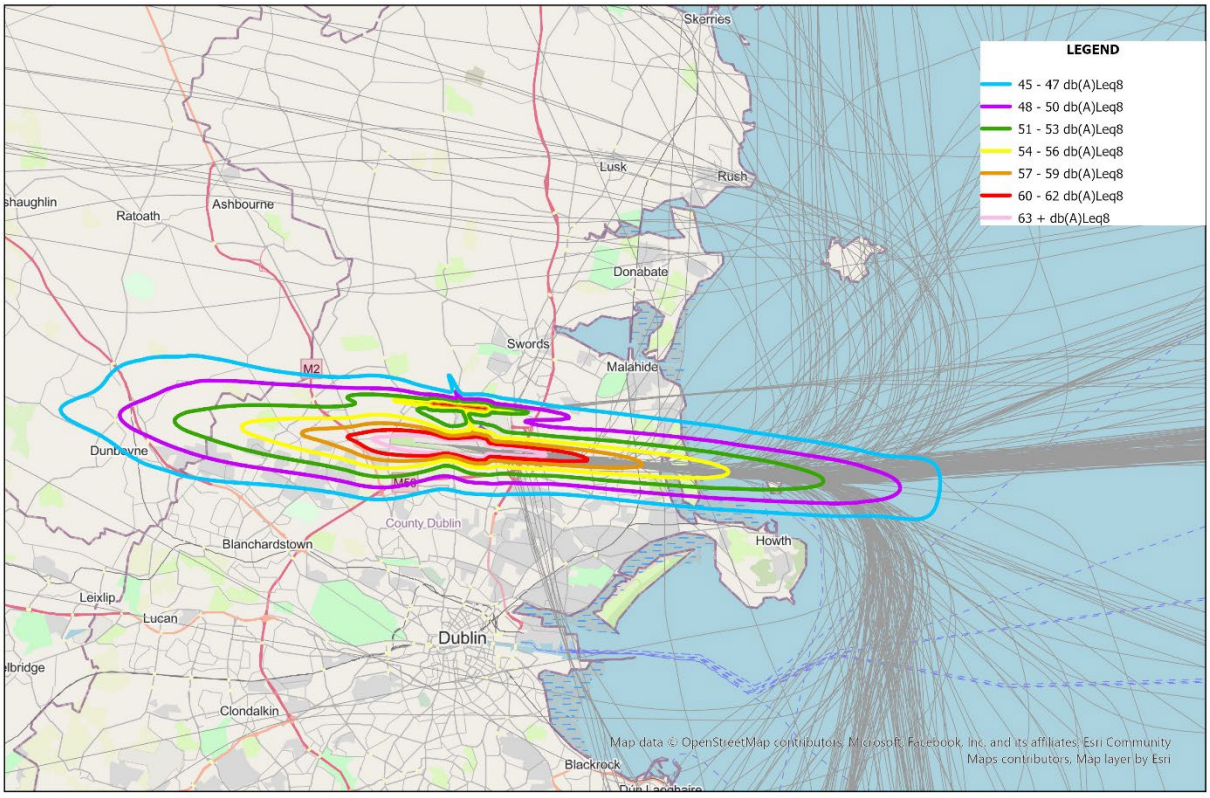
A11429_2023_Actual_Summer_LAeq8_v2_Act_Modal - Night

Busiest Day Departures on Easterly and Summer Day contour



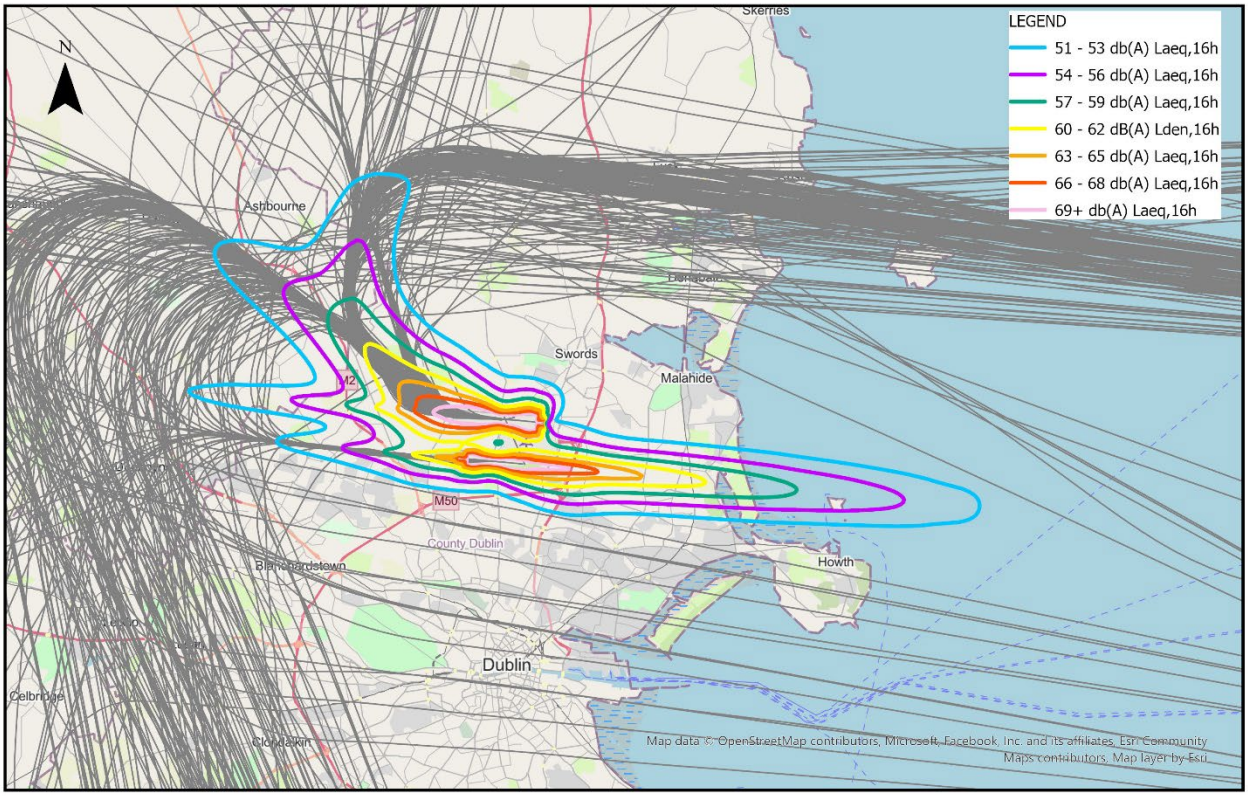
A11429_2023_Actual_Summer_LAeq16_v2_Act_Modal - Day

Busiest Day Departures on Easterly and Summer Night contour



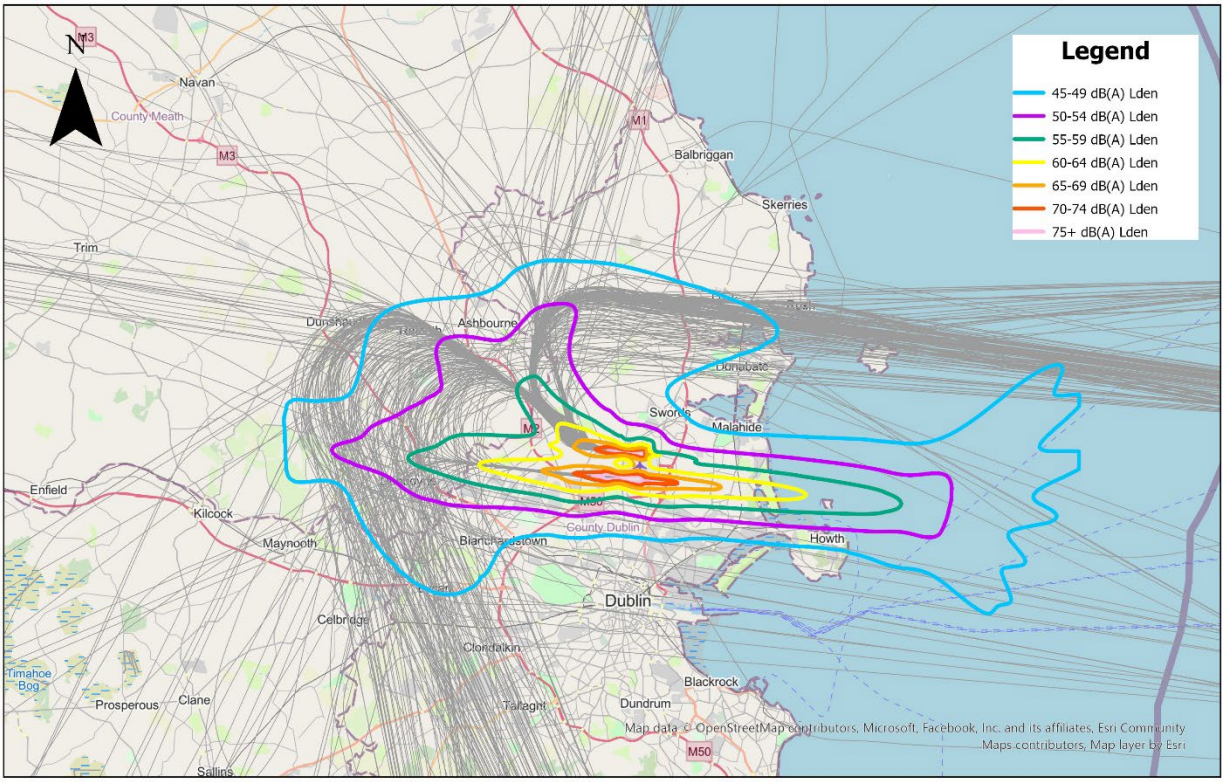
A11429_2023_Actual_Summer_LAeq8_v2_Act_Modal - Night

Busiest Day Departures on Westerly and Summer Day contour



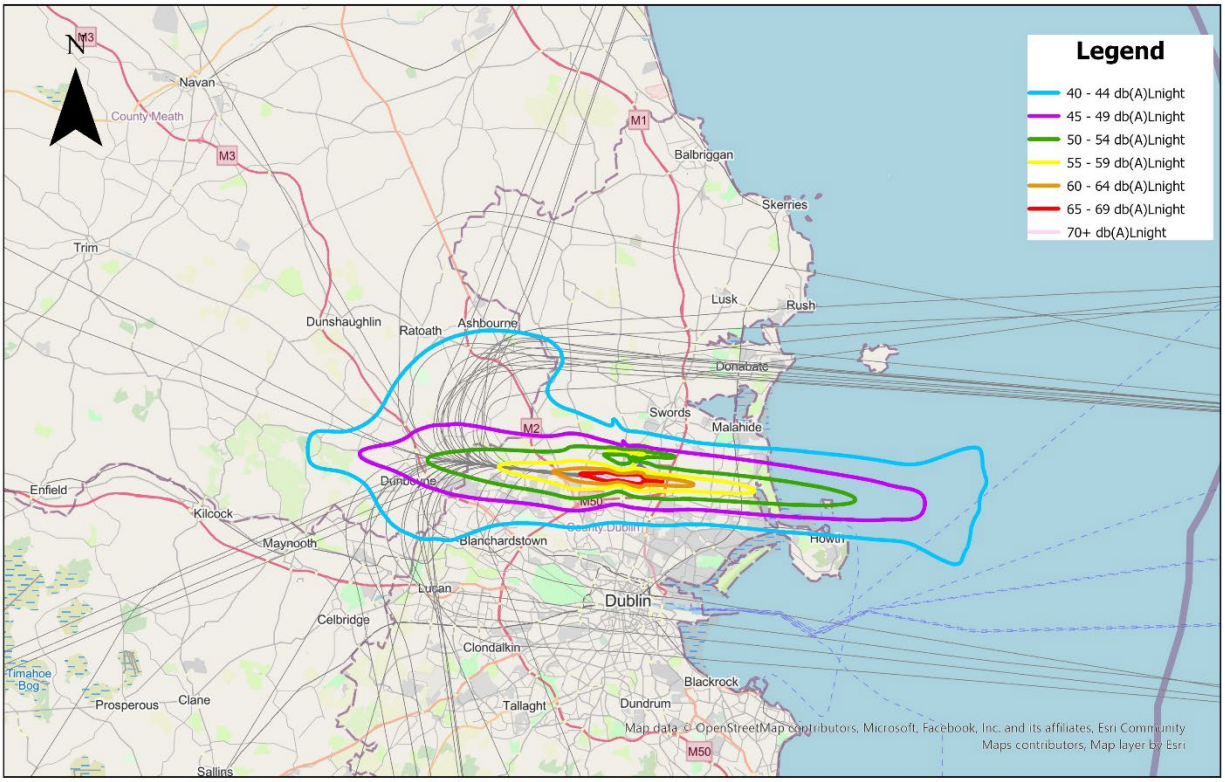
A11429_2023_Actual_Summer_LAeq16_v2_Act_Modal - Day

Busiest Day Departures and Annual Lden



A11429_2023_Actual_Annual_Lden_v2_Act_Modal

Busiest Day Departures and Annual Lnight



A11429_2023_Actual_Annual_Lnight_v2_Act_Modal

App 9 Track Adherence and Deviation Data

Track Deviations by Month and by Operational Runway

Month	SR 10R	SR 28L	NR 10L	NR 28R	Total
1	0.01%	0.09%	0.00%	23.45%	23.55%
2	0.04%	0.11%	0.01%	16.54%	16.70%
3	0.13%	0.27%	0.00%	3.36%	3.76%
4	0.30%	0.30%	0.00%	3.14%	3.75%
5	0.12%	0.35%	0.00%	3.08%	3.55%
6	0.23%	0.17%	0.00%	2.59%	2.99%
7	0.12%	0.13%	0.00%	7.52%	7.78%
8	0.07%	0.02%	0.00%	8.86%	8.96%
9	0.09%	0.02%	0.01%	6.11%	6.23%
10	0.57%	0.06%	0.00%	5.54%	6.17%
11	0.09%	0.02%	0.00%	8.52%	8.63%
12	0.02%	0.02%	0.00%	7.87%	7.92%
Total	1.80%	1.58%	0.02%	96.59%	

2023 Track Deviations by Hour, by Aircraft Type (Top 20) and by Airline (Top 20)

Hour	Track Deviations
0	0.11%
1	0.04%
2	0.16%
3	0.02%
4	0.01%
5	0.10%
6	0.26%
7	2.20%
8	2.36%
9	10.35%
10	7.02%
11	9.78%
12	10.36%
13	9.74%
14	8.57%
15	8.25%
16	8.99%
17	8.96%
18	4.07%
19	3.21%
20	2.75%

Rank	AC type	Track Deviations
1	A320	27.61%
2	A20N	25.75%
3	B738	14.47%
4	A319	5.53%
5	B38M	4.72%
6	A321	3.86%
7	A21N	3.64%
8	A333	2.79%
9	E190	2.40%
10	B77W	0.75%
11	B788	0.75%
12	A332	0.73%
13	B737	0.45%
14	B752	0.45%
15	BCS3	0.41%
16	E195	0.41%
17	B763	0.40%
18	B789	0.38%
19	LJ45	0.34%
20	DH8D	0.27%
Total		96.1 %

Rank	Airline	Track Deviations
1	EIN	32.3%
2	RYR	18.6%
3	BAW	12.6%
4	DLH	8.3%
5	VLG	3.3%
6	SAS	3.1%
7	AFR	2.0%
8	KLM	1.30%
9	MSR	1.26%
10	THY	1.23%
11	SZS	1.16%
12	BCS	1.05%
13	HYS	1.05%
14	CFE	0.86%
15	UAE	0.73%
16	QTR	0.69%
17	SWR	0.64%
18	TAP	0.60%
19	ETD	0.58%
20	GWI	0.55%
Total		91.9%

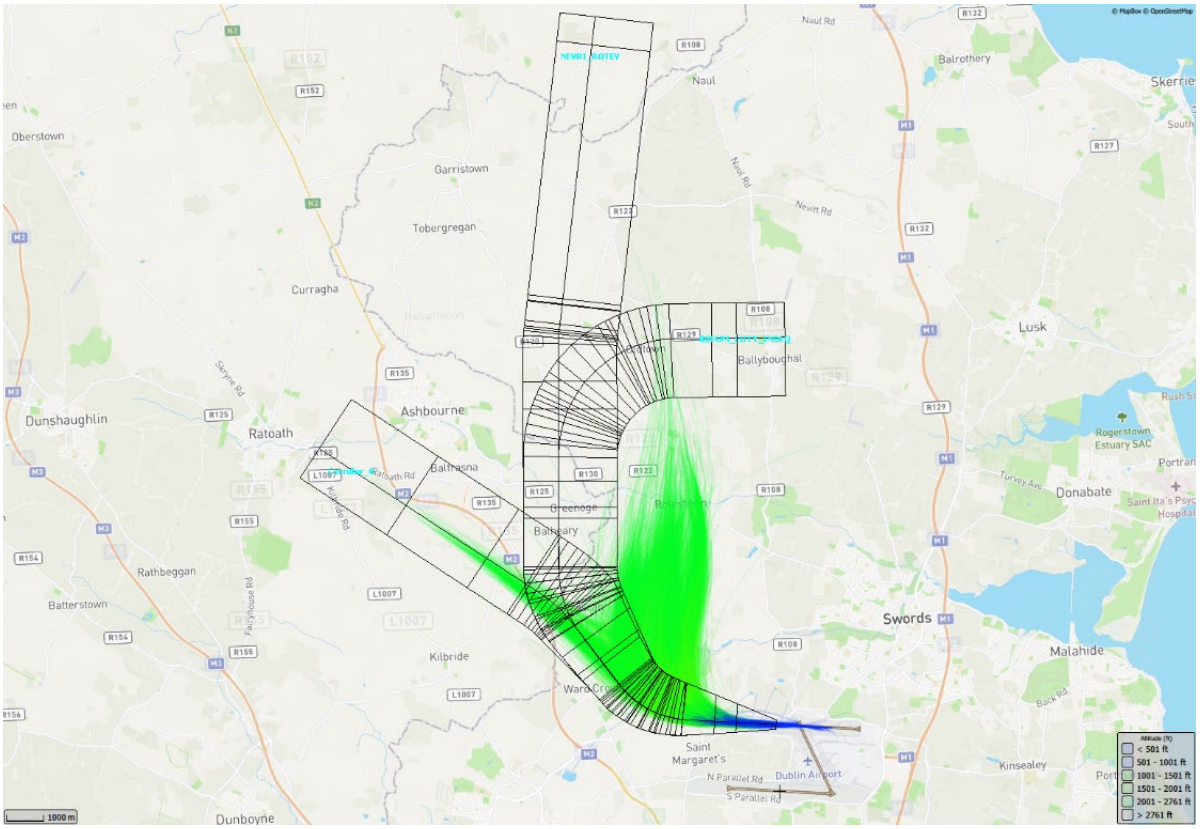
21	2.37%
22	0.24%
23	0.07%
Total	100%

Cat C/D departures vs track adherence

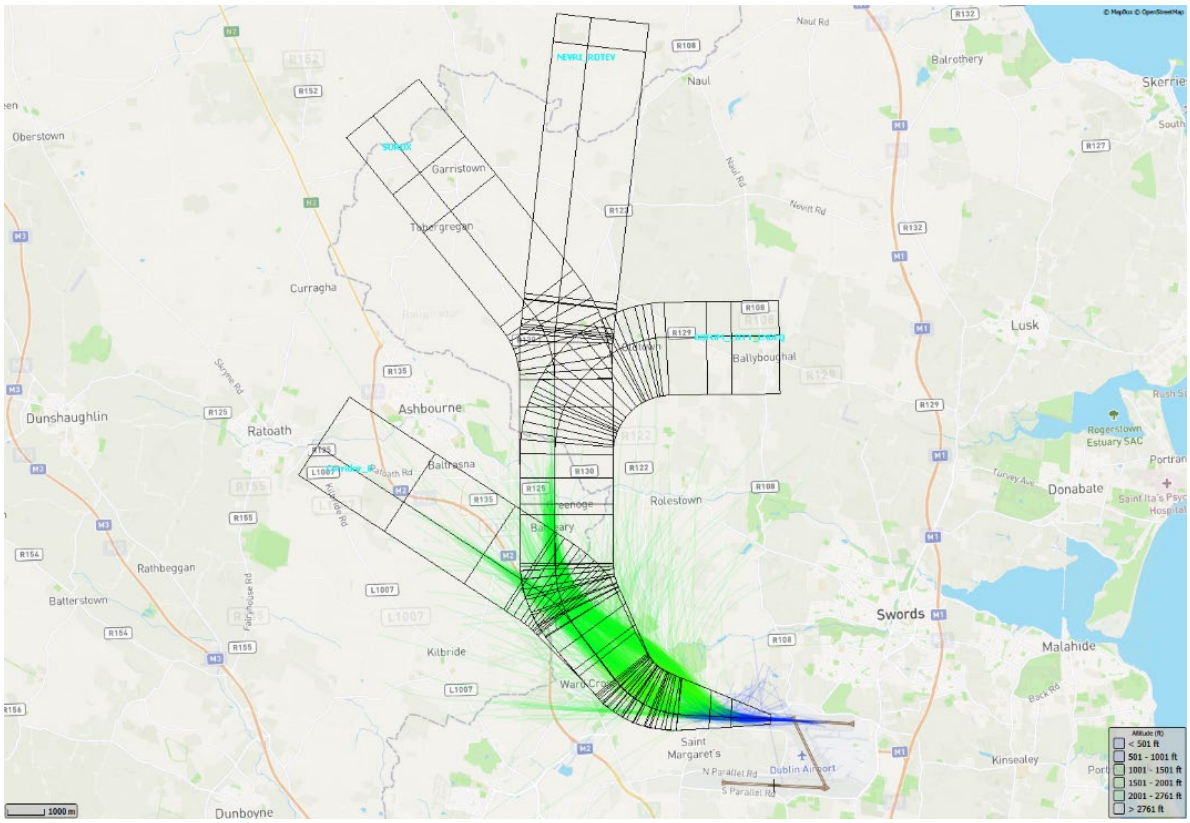
AC type	Track Deviations	2023 Movements	2023 Track Deviations
A320	27.61%	24685	2270
A20N	25.75%	435	2117
B738	14.47%	37632	1190
A319	5.53%	1254	455
B38M	4.72%	12710	388
A321	3.86%	1661	317
A21N	3.64%	3974	299
A333	2.79%	4476	229
E190	2.40%	3724	197
B77W	0.75%	1467	62
B788	0.75%	2664	62
A332	0.73%	4	60
B737	0.45%	179	37
B752	0.45%	1197	37
BCS3	0.41%		34
E195	0.41%	473	34
B763	0.40%	2069	33
B789	0.38%		31
LJ45	0.34%	316	28
DH8D	0.27%	262	22

App 11 Deviation locations

28R Deviations – Day - 01/01/2023 to 23/02/2023 – Before SID and NPR change



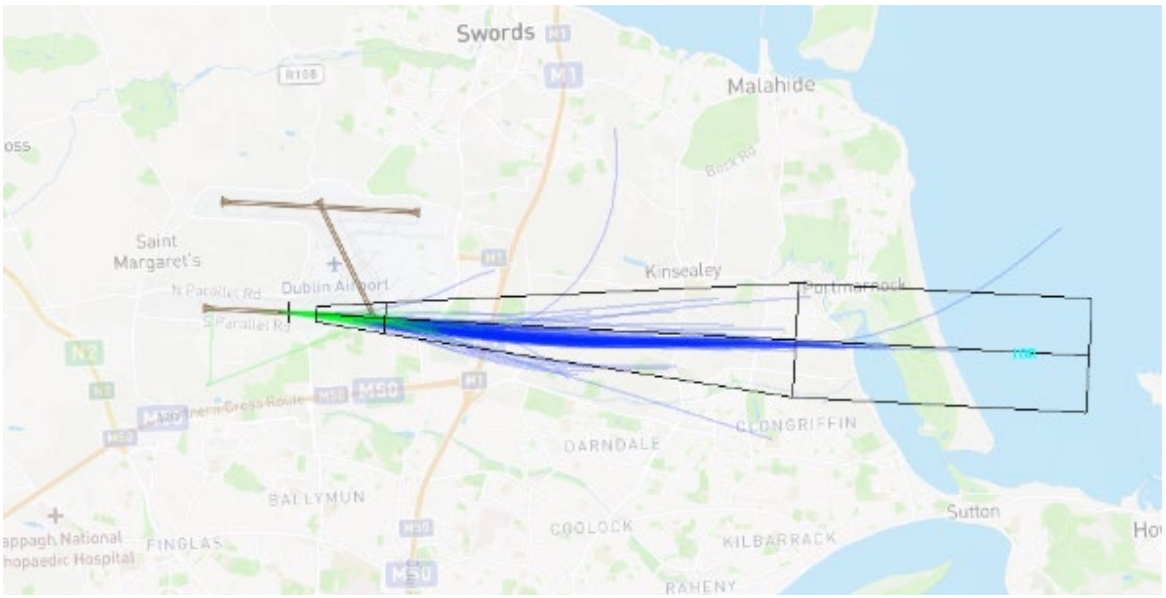
28R Deviations – Day - 24/02/2023 to 31/12/2023 - After SID and NPR change



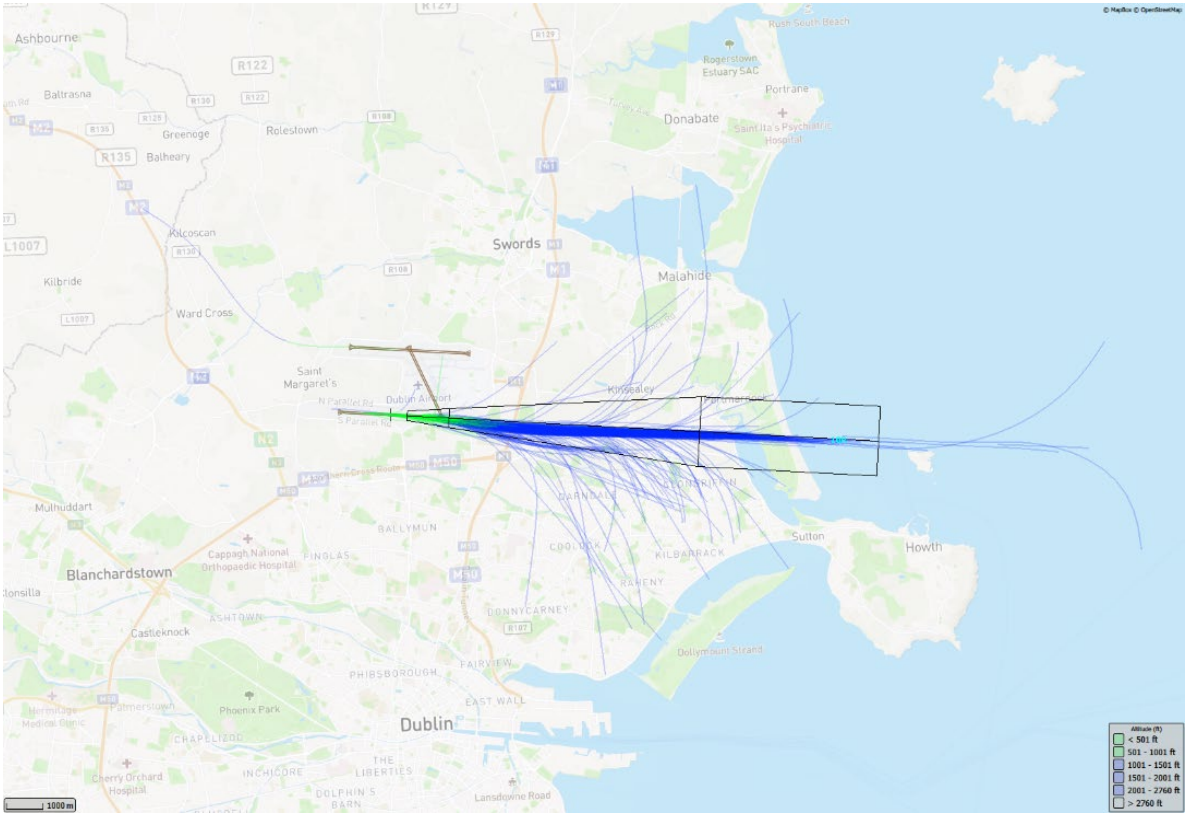
App 12 NPR Deviations - Day and night

10L Deviation - Night

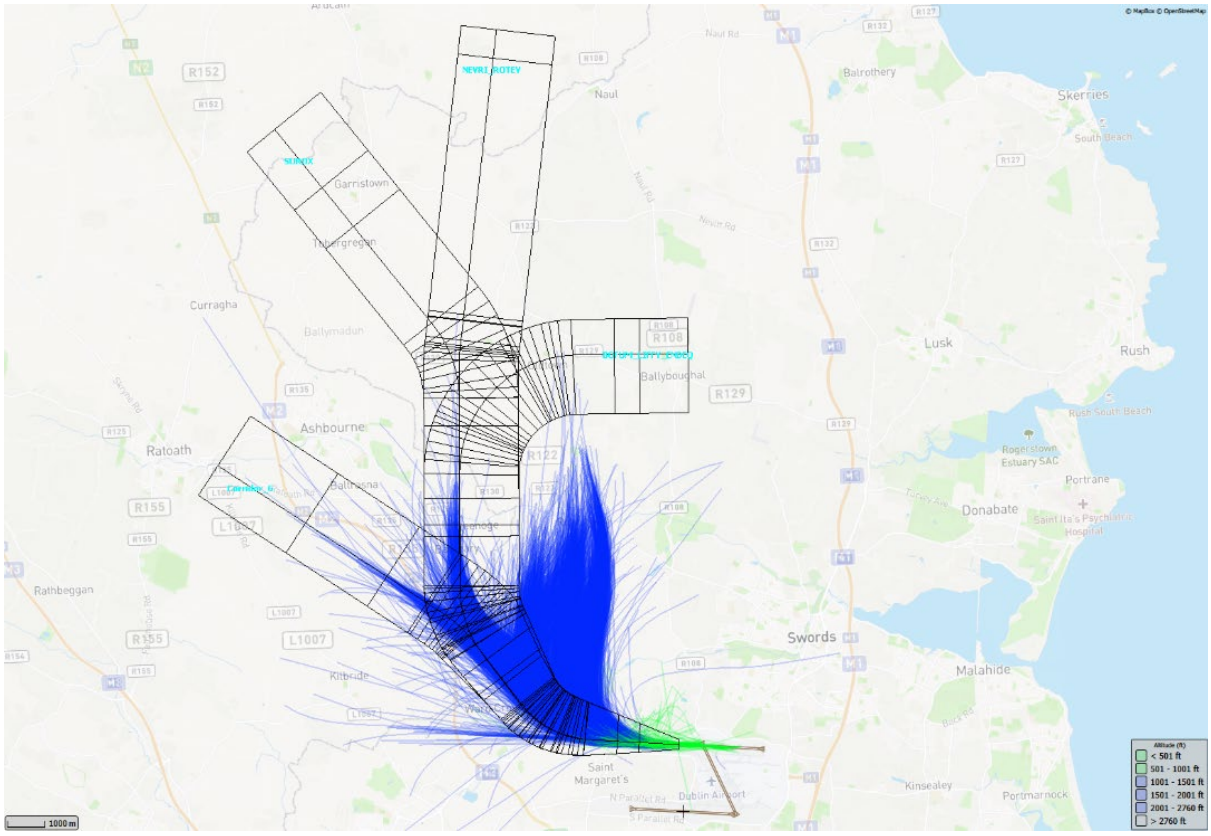
10R Deviations - Night



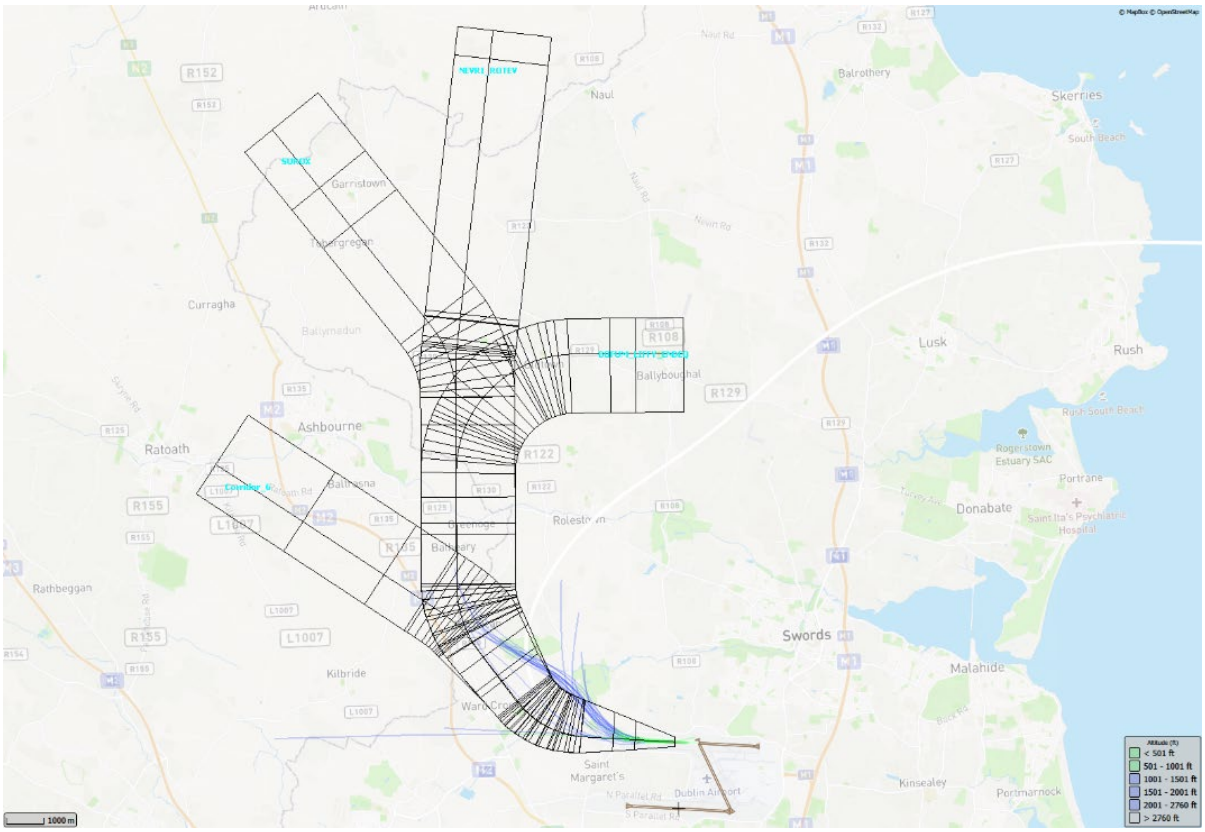
10R Deviations - Day



28R Deviations - Day



28R Deviations - Night

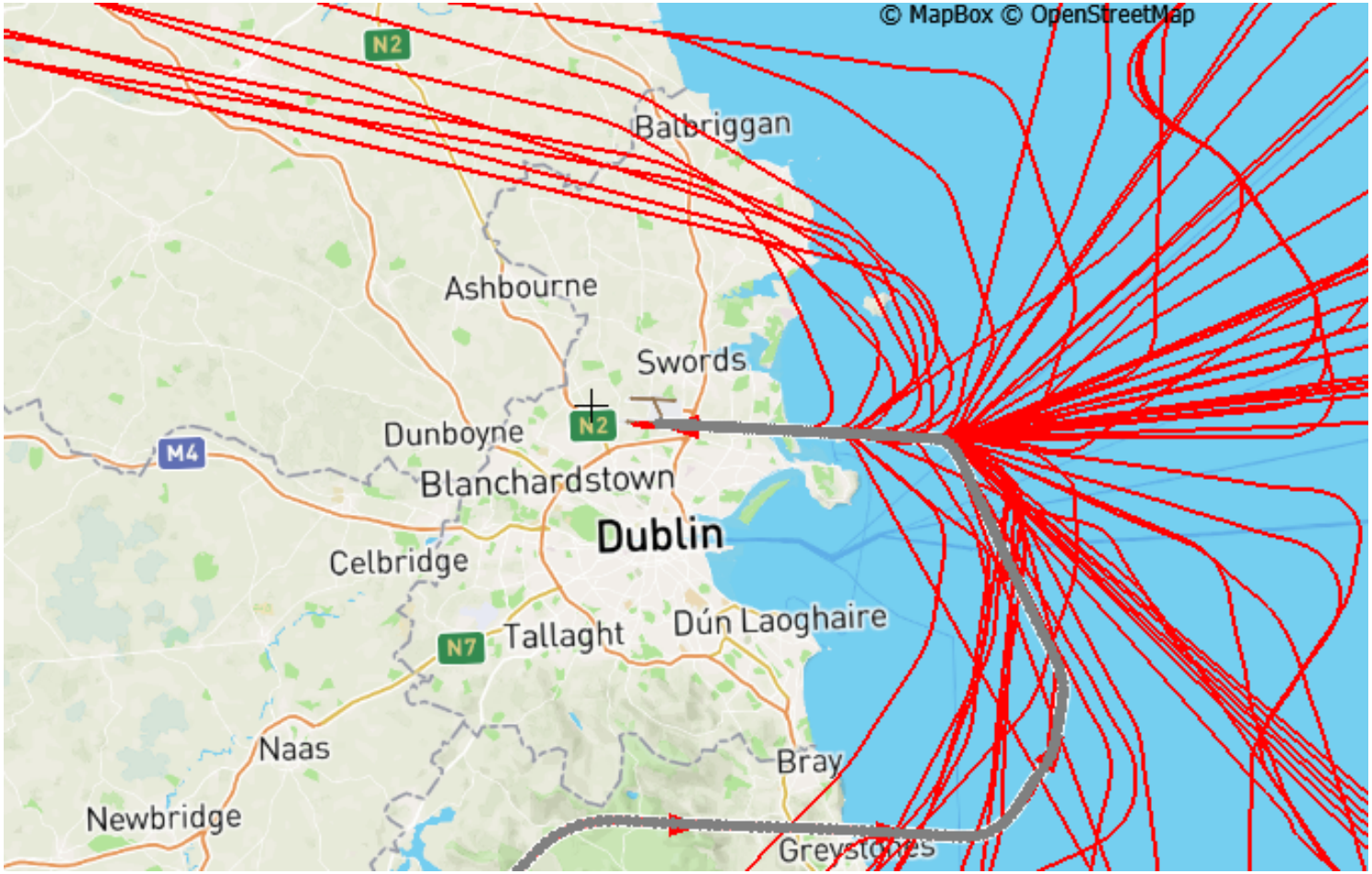


App 13 IFP Listings for 2023

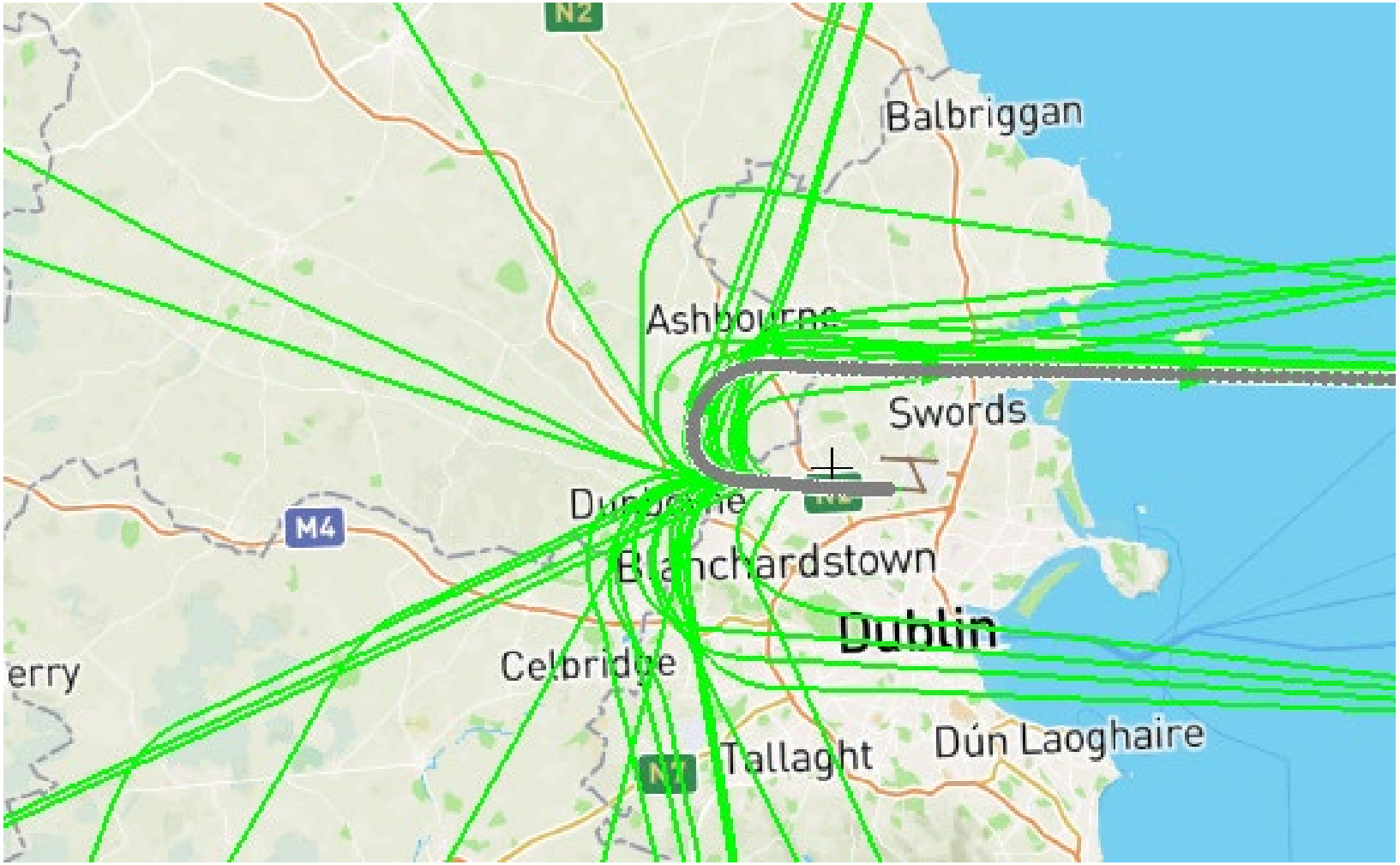
Chart	IFP Name	AIP Effective	Target AIP	Reason for Change	Flight Procedure Change Affecting Operating Procedure (Y/N)	Comment	Potential Noise Impact from Flight Procedure Change (Y/N)	Incidents of Failure to Comply with Flight Procedure Change Leading to Noise Event / Track Violation (Y/N)	Status
AD 2.24-1	Aerodrome Chart - daa	02-Nov-23	daa responsibility	Continued upgrading of the aerodrome infrastructure necessitated revision of documents.	Y	Optimising taxiways allowing use of November 1 for RWY 28R (and November 7 for RWY 10L).	Y Lateral flight tracks not affected however potential change in ground noise.	N	Implemented
AD 2.24-2	Parking and Docking-daa	02-Nov-23	daa responsibility	Continued upgrading of the aerodrome infrastructure necessitated revision of documents.	N	N/A	N	N	Implemented
AD 2.24-13	RWY 28R C-D SIDs	20-Apr-23	(IFP change in effect from 23-Feb-23)	Improve alignment with desired preferential routes associated with Planning approval.	Y	Revised SIDs maintain safety requirements while optimising flight track for Departures.	Y	N (Different aircraft avionics determine slight variance in flight tracks flown, this is monitored by daa against the Noise Preferential Routes for reporting and further investingation of Aviation Noise events).	Implemented
AD 2.24-15	RWY 10L C-D SIDs	20-Apr-23	(IFP change in effect from 23-Feb-23)	Improve alignment with desired preferential routes associated with Planning approval.	Y	Revised SIDs maintain safety requirements while optimising flight track for Departures.	Y	N (Different aircraft avionics determine slight variance in flight tracks flown, this is monitored by daa against the Noise Preferential Routes for reporting and further investingation of Aviation Noise events).	Implemented

App 14 Night Flight Tracks on Busiest Day and Summer Night Contour

Night arrivals on the busiest day



Night departures on the busiest day



Summer Night Noise Contours