MIAMI EXECUTIVE AIRPORT

Calendar Year 2023 Noise Contours Technical Noise Report

April 2024

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1 Introduction

This report provides the analysis and overview of the noise modeling data preparation and resulting contours for the calendar year 2023 at Miami Executive Airport (TMB). The Federal Aviation Administration's (FAA's) Aviation Environmental Design Tool version 3f (AEDT) was used to develop the Day-Night Average Sound Level (DNL) contours for the calendar year 2023. These contours were compared to the TMB 2017 noise contours that were previously modeled using the AEDT 2d.

The TMB 2023 noise contours were prepared using aircraft activity information from calendar year 2023. Information was gathered from Miami-Dade Aviation Department's (MDAD's) Airport Noise and Operations Monitoring System (ANOMS) and the FAA's Operations Network (OPSNET). A detailed discussion of the model inputs used to develop these contours is included in the following sections.

2 Aircraft Operations and Fleet Mix

ANOMS data provided information for noise contour development including the date, time of day, operation type (departure, arrival, or touch and go), runway used, flight and/or tail number, aircraft type, airline, and destination/origin for operations occurring at TMB. The ANOMS system recorded a total of 86,066 airport operations in 2023 while the FAA's OPSNET data, which reflect operations counts collected by TMB air traffic controllers, reported 269,962 airport operations at TMB during the same timeframe.[1]

Due to system limitations, the ANOMS is not able to capture every operation. While the ANOMS recorded operations less than OPSNET, the OPSNET numbers were used for the total operational count in the development of the 2023 noise contours. As a result, the ANOMS fleet data was scaled to the operations reflected in OPSNET. This equates to an average of approximately 740 daily operations (defined as either an arrival, departure, or touch and go) at TMB during the calendar year 2023.

An attempt was made to reconcile the deficit in fleet information between the ANOMS fleet data set and the total operations included in ATADS. Data was downloaded from the FAA's Traffic Flow Management System Counts (TFMSC) for calendar year 2023 at TMB and compared to the ANOMS and ATADS data sets. Unfortunately, the TFMSC data set had an even larger deficit, reporting a total of only 19,116 operations at TMB in 2023. As a result, the ANOMS fleet data was considered more complete for the purpose of scaling.

Fleet mix defines the various types of aircraft and allows the development of very specific input data, such as engine, airframe, gross weight, and departure stage length for each aircraft. The AEDT aircraft database contains noise and performance data for 300 different types of aircraft and helicopters. The AEDT also has the functionality to allow the modeler to select different airframes and engine types, resulting in a database of over 3,600 unique aircraft. As described above, ANOMS data provided a comprehensive list of aircraft that utilized TMB for the calendar year 2023. The AEDT aircraft database was used to build a fleet mix representative of aircraft in operation at TMB

[1] https://aspm.faa.gov/opsnet/sys/airport.asp, accessed February 16, 2023.

during calendar year 2023. AEDT fleet mix is presented in **Appendix A-1** through **Appendix A-** or various airport operational parameters, described below.

3 Stage Length

Departure destination information provided by the ANOMS was analyzed to determine departure stage lengths. An aircraft's stage length (or trip length) refers to the distance an aircraft flies from its origin airport (TMB) to its intended destination. Stage length is important in noise modeling since the longer the distance an aircraft will fly to its destination, the greater the fuel load required and overall weight and, as a result, the lower its departure profile will be. **Table 1** provides the trip distance to its associated stage length. The stage length information used to develop the TMB 2023 noise contours is included in **Appendix A-1**.

Table 1. Stage Length

Stage Length	Trip Length (nmi)
1	0 – 500
2	500 – 1,000
3	1,000 – 1,500
4	1,500 – 2,500
5	2,500 – 3,500
6	3,500 – 4,500
7	4,500 – 5,500
8	5,500 – 6,500
9	6,500 – 11,000
M	Maximum Range at Maximum Takeoff Weight

SOURCE: FAA, 2023.

4 Time of Day

Day-night use percentages are also included in the development of DNL contours. For the DNL metric, noise events occurring between the hours of 10:00:00 p.m. and 6:59:59 a.m. receive a 10 dB "penalty". A 10 dB penalty means each nighttime noise event is equivalent to 10 daytime events. This penalty attempts to account for the higher sensitivity to noise in the nighttime and the expected decrease in background noise levels at night in comparison with background noise levels during the day.

TMB has a day and night percentage split of arrivals, departures, and touch ago goes at approximately 96 percent and 4 percent, 97 percent and 3 percent, and 98 percent and 2 percent, respectively, as shown in **Table 2**. A detailed breakdown of time-of-day percentages by AEDT aircraft type are shown in **Appendix A-2**.

Table 2. Day-Night Arrival and Departure Percentages

	Arrival		Departure		Touch and Go		
	Day	Night	Day	Night	Day	Night	Total
Total	24,005	1,073	27,036	893	32,465	594	86,066
Percentage	95.7%	4.3%	96.8%	3.2%	98.2%	1.8%	100.0%

SOURCE: MDAD ANOMS, 2023; ESA, 2024.

5 Runway Use

The primary factor affecting runway use at airports is weather, in particular the wind direction and wind speed. Additional factors that may affect runway use include the position of the facility or ramp relative to the runways. Some airports have a preferred or preferential runway system that balances noise concerns with the safest and most efficient use of the airport. If a certain runway is used predominantly for departures while another runway is used for arrivals, the noise contours will differ to reflect this type of activity. **Table 3** and **Table 4** shows the runway use percentages by day-night departures and arrivals for fixed-wing aircraft and helicopters, respectively. The data shows that TMB most commonly operates day and night in an east flow condition utilizing Runways 09L and 09R a total of 71.1 percent of the time. This is a result of the strong ocean breezes and the performance needs of aircraft to depart into the wind. Runway 09R has the highest percentage of runway operations at approximately 41 percent and is heavily used during the nighttime hours.

Table 3. 2023 Fixed-Wing Runway Use

	Arrival		Departure		Touch and Go		
Runway	Day	Night	Day	Night	Day	Night	Overall
09L	17.2%	11.9%	33.9%	25.1%	35.7%	51.2%	30.1%
09R	55.8%	67.9%	36.9%	34.1%	34.3%	21.0%	41.0%
13	0.6%	0.1%	0.4%	0.6%	0.7%	0.2%	0.6%
27L	19.1%	17.7%	21.0%	33.8%	21.0%	15.9%	20.5%
27R	7.1%	2.4%	7.1%	5.8%	8.0%	11.7%	7.4%
31	0.2%	0.1%	0.7%	0.6%	0.3%	0.0%	0.4%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

SOURCE: MDAD ANOMS, 2023; ESA, 2024.

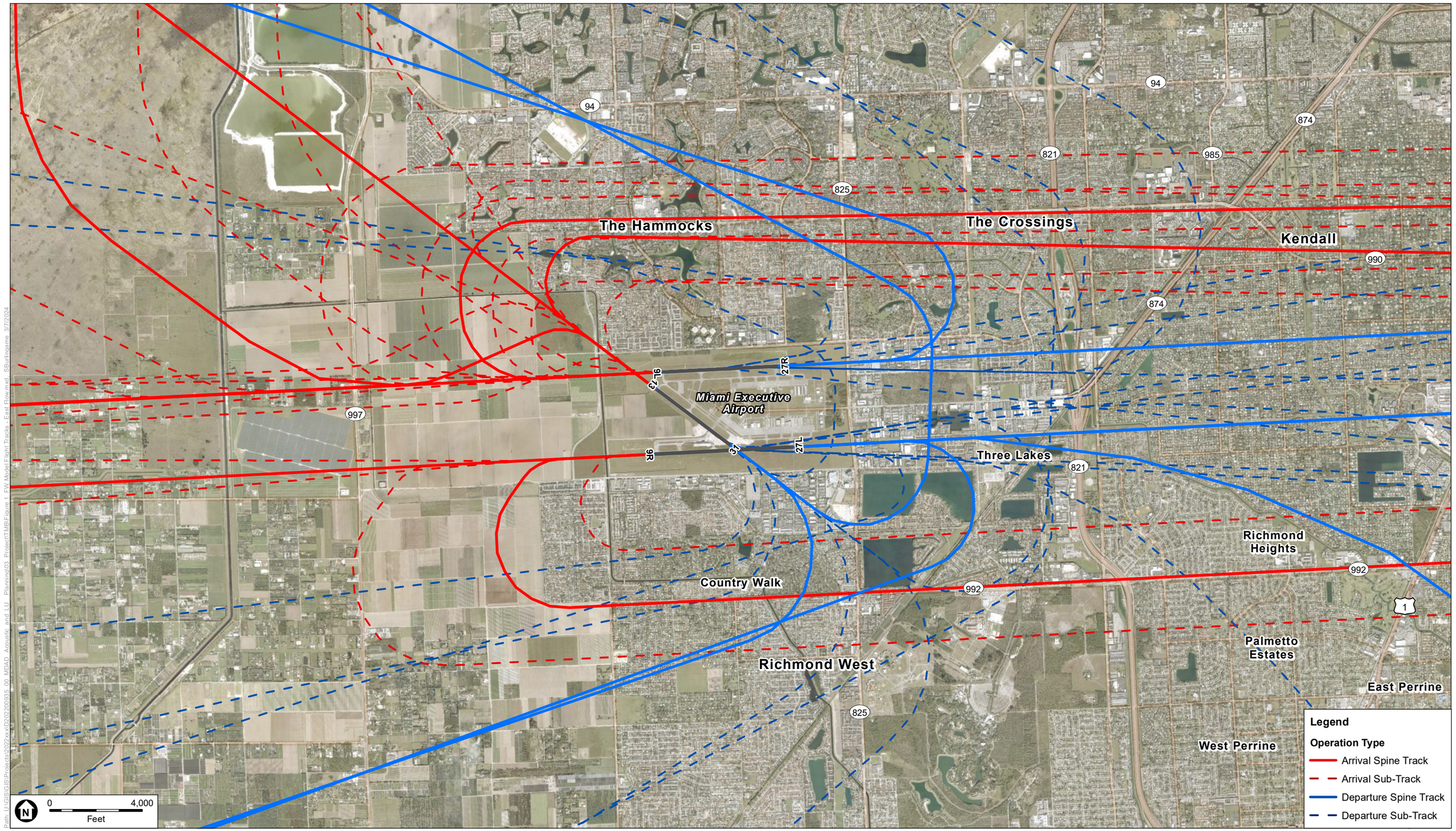
Table 4. 2023 Helicopter Runway Use

	Arrival		Departure		
Runway	**Day**	**Night**	**Day**	**Night**	**Overall**
H09L	0.3%	0.0%	5.5%	16.5%	3.2%
H09R	0.5%	0.0%	2.6%	1.6%	1.5%
H1	96.4%	75.8%	90.6%	79.8%	92.6%
H13	0.0%	0.0%	0.1%	0.0%	0.1%
H27L	0.7%	4.9%	0.6%	1.1%	0.8%
H27R	1.9%	19.3%	0.2%	0.0%	1.6%
H31	0.1%	0.0%	0.3%	1.1%	0.2%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

SOURCE: MDAD ANOMS, 2023; ESA, 2024.

6 Flight Tracks

Flight track and flight track use percentages are a key element in the development of the DNL contours. Radar flight tracks obtained from ANOMS were compared to the 2017 modeled flight tracks and modified as necessary. The flight track use percentages were updated from the 2017 modeling as the metroplex had changed the overall use of the airspace around TMB. Dispersion of aircraft operations across sub-tracks is presented in **Appendix A-3**. The flight track locations are depicted in **Figure 1** through **Figure 3**.



Path: U:\GIS\GIS\Projects\2022xx\D202200935_00_MDAD_Acoustic and LU_Planning\03_Project\TMB\Figure 1_FW Model Flight Tracks - East Flow.mxd_SBurlingame_3/7/2024

SOURCE: AEDT 3f; ESA, 2024.
AEDT = Aviation Environmental Design Tool.

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Figure 1
Fixed-Wing Model Flight Tracks - East Flow

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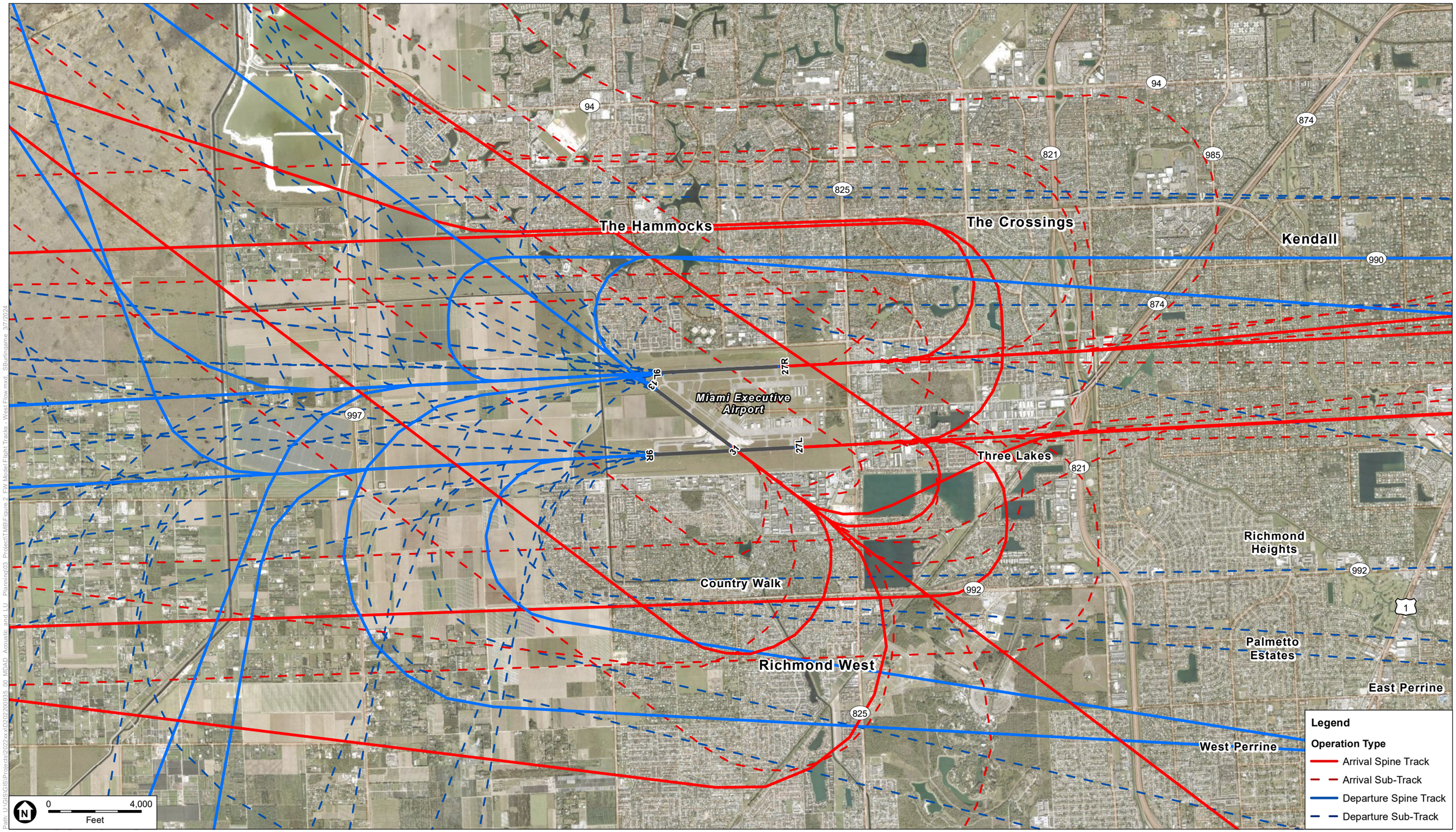

SOURCE: AEDT 3f; ESA, 2024.
AEDT = Aviation Environmental Design Tool.

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Figure 2
Fixed-Wing Model Flight Tracks - West Flow

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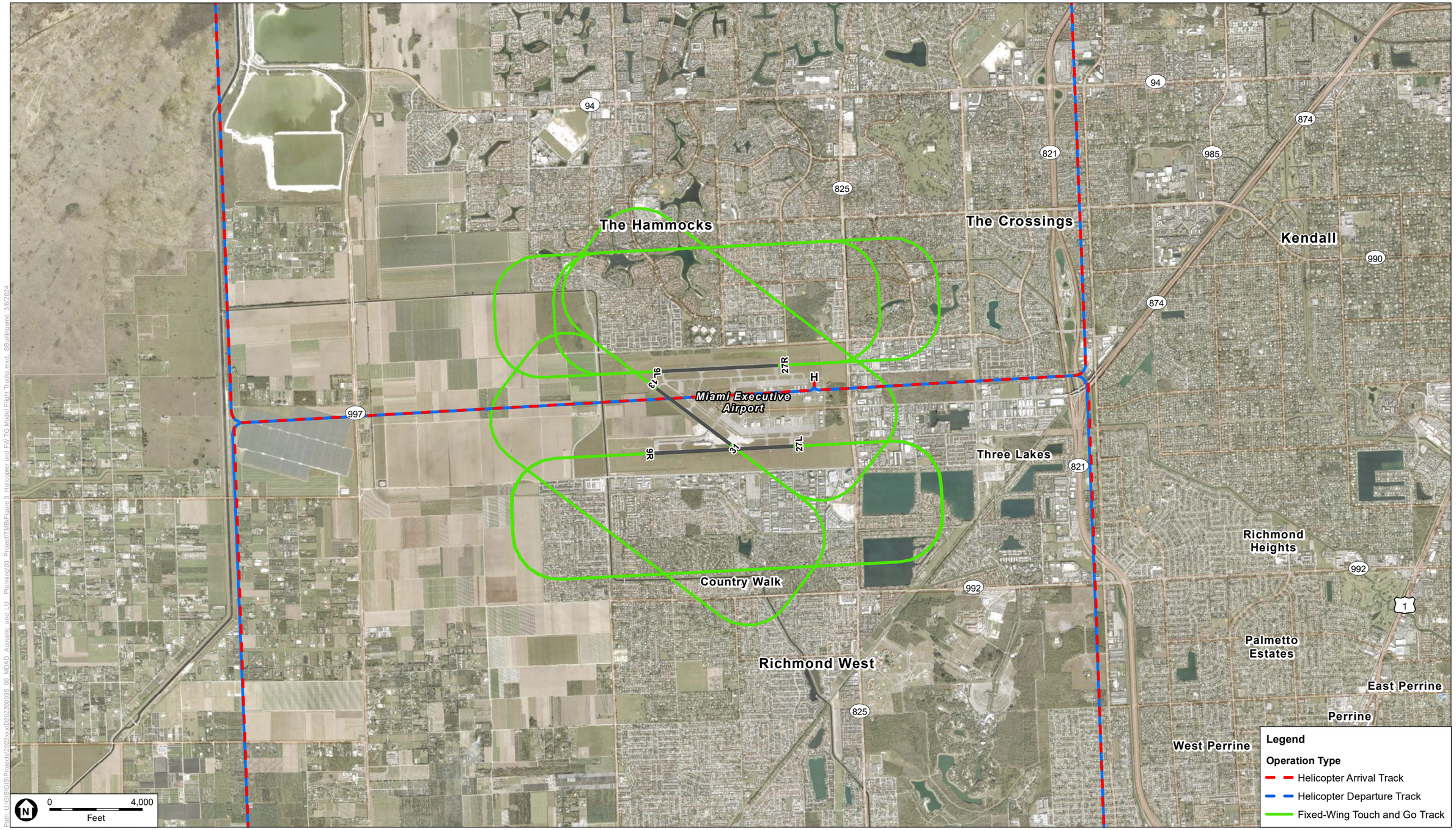

Path: U:\GIS\GIS\Projects\2022\xx\D2022009335_00_MDAD_Acoustic_and_LU_Planning\03_Project\TMB\Figure 3_Helicopter_and_FW_TG_Model_Flight_Tracks.mxd, SBurlingame, 3/8/2024

SOURCE: AEDT 3f; ESA, 2024.
AEDT = Aviation Environmental Design Tool.

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Figure 3
Helicopter and Fixed-Wing Touch and Go Model Flight Tracks

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7 Meteorological Conditions

AEDT has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include 10-year average temperature, barometric pressure, and relative humidity at the airport. AEDT includes the following values for annual average weather conditions at TMB:

- Temperature: 76.7° F
- Pressure: 1016.69 millibars
- Sea-level Pressure: 1017.08 millibars
- Relative Humidity 76.13%
- Dew Point: 68.6° F
- Wind Speed: 6.72 Knots

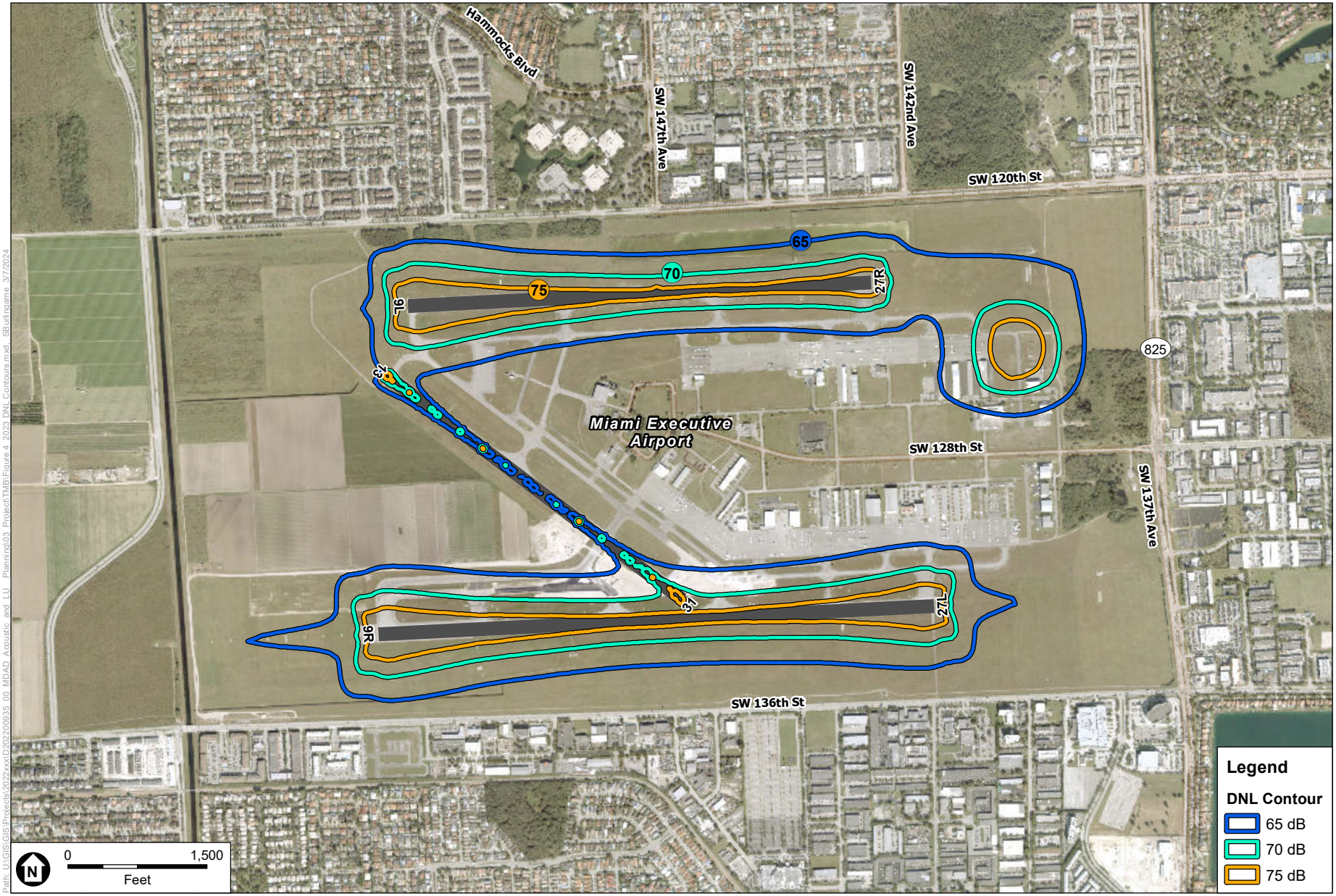
8 Terrain

Terrain data describes the elevation of the ground surrounding the airport and on airport property. If the AEDT user selects the use of terrain data, AEDT uses terrain data to adjust the ground level under the flight paths. The terrain data does not affect the aircraft's performance or noise levels, but does affect the vertical distance between the aircraft and a "receiver" on the ground. This in turn affects how noise propagates over ground. ESA obtained 1/3 arcsecond terrain data from the United States Geological Survey (USGS) National Map Viewer and it was used with the terrain feature of the AEDT in generating the noise contours.[2]

9 2023 DNL Contours

The information described above was compiled and incorporated into the AEDT. The AEDT calculates noise using a defined network of grid points at ground level around an airport. It computes the noise generated by each aircraft operation, by aircraft type and engine thrust level along each flight track. Corrections are applied for atmospheric acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are then summed at each grid point. The cumulative noise exposure levels at all grid points are then used to develop noise exposure contours for selected values (e.g. DNL 65, 70 and 75 dB). Using the results of the grid point analysis, noise contours of equal noise exposure can then be plotted. The 2023 TMB noise contours for DNL 65, 70, and 75 dB are shown in **Figure 4**. These contours represent the noise exposure to areas surrounding TMB on an average annual day. The overall shape of the noise contours reflect the east and west orientation of the runways at TMB. The area of the contours in square miles is shown in **Table 5**. Each contour area is inclusive of the subsequent contour areas. Therefore, the cumulative footprint of all three contours is approximately 0.62 square miles.

[2] USGS terrain data obtained on February 12, 2024.



SOURCE: Esri; AEDT 2d and 3f; ESA, 2024.
AEDT = Aviation Environmental Design Tool.
DNL = Day-Night Average Sound Level.
dB = Decibel.

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Figure 4
2023 DNL Contours

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Table 5. 2023 DNL Contour Areas

DNL	Contour Area (Sq. Mi.)
≥ 65	0.62
≥ 70	0.28
≥ 75	0.11

SOURCE: AEDT 3f; ESA 2024.

As stated previously, TMB typically operates in an east flow condition due to the predominant winds at the airport. The narrower more defined contour bands to the west of the airport reflect the influence of the high number of arriving aircraft from the west, while the wider bands of contours to the east reflect the higher number of aircraft departures to the east.

10 2017 and 2023 DNL Contour Comparison

In order to determine the changes in noise exposure that occur over time, it is helpful to compare previous contours to existing contours. The TMB 2023 DNL contours were produced with AEDT 3f and the 2017 DNL contours were produced with AEDT 2d, as such every effort was made to ensure that the differences in models did not unduly influence the contour shapes.

A comparison of the TMB 2017 and 2023 DNL contours is shown in **Figure 5**. Noise exposure areas of increase and decrease between the TMB DNL 2017 and DNL 2023 are depicted in **Figure 6**. **Table 6** compares the area coverage of 2017 and 2023 contours.

Table 6. DNL Contour Area Comparison

	DNL Contour Area (Sq. Mi.)		
DNL	2023	2017	Difference
≥ 65	0.62	0.75	-0.13
≥ 70	0.28	0.33	-0.05
≥ 75	0.11	0.15	-0.04

SOURCE: AEDT 2c; AEDT 3f; ESA 2024.

As presented in **Table 6**, the 2023 DNL contours are slightly smaller in area than the 2017 DNL contours. **Table 7** compares the aircraft operations during 2017 and 2023. The number of total aircraft operations decreased by 30,353 (approximately 10%) from 2017 to 2023, which supports the overall decrease in noise exposure. The overall shift in noise exposure away from Runway 9R-27L towards the helipad area is primarily due to the differences in aircraft fleet mix as reported by the ANOMS from 2017 to 2023.

Table 7. Aircraft Operations Comparison

	Arrival		Departure		Touch and Go		
Year	Day	Night	Day	Night	Day	Night	Total
2017	95,536	1,684	95,536	1,684	104,040	1,834	300,315
2023	74,355	4,968	76,309	3,013	107,125	4,192	269,962
Difference	(21,182)	3,284	(19,227)	1,329	3,086	2,358	(30,353)

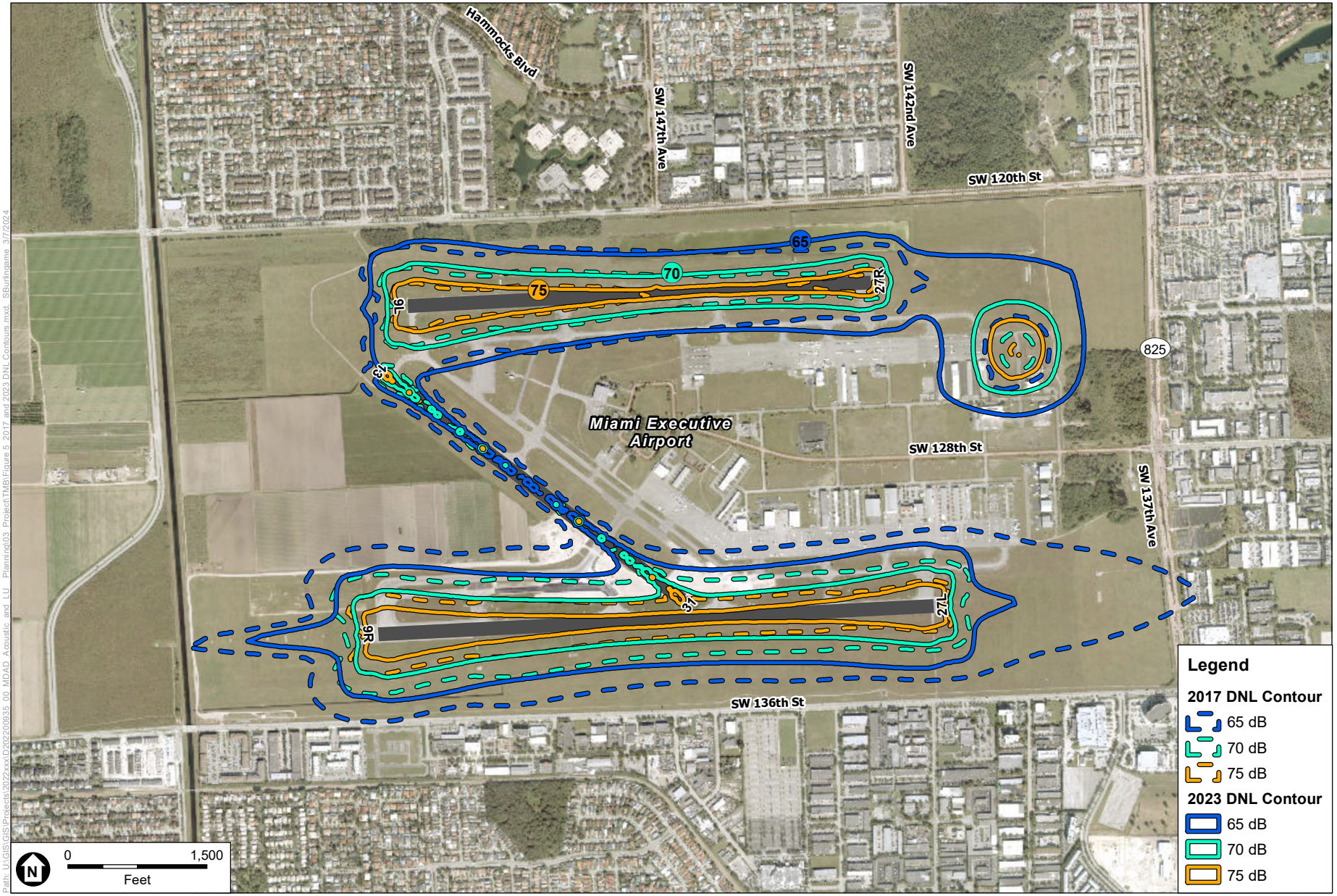
SOURCE: MDAD ANOMS, 2023; ESA, 2024.

Table 8 compares overall runway use between 2017 and 2023. As depicted in the table, the use of H1 by helicopters in 2023 caused an increase in exposure at the east side of the north apron.

Table 8. Overall Runway Use Comparison

Runway	2017	2023	Difference
Fixed Wing			
09L	32.5%	30.1%	-2.4%
09R	47.3%	41.0%	-6.3%
13	1.9%	0.6%	-1.3%
27L	13.1%	20.5%	7.4%
27R	4.5%	7.4%	2.9%
31	0.7%	0.4%	-0.3%
Helicopter			
H09L	17.4%	3.2%	-14.2%
H09R	20.8%	1.5%	-19.3%
H1	52.6%	92.6%	40.0%
H13	1.5%	0.1%	-1.4%
H27L	6.6%	0.8%	-5.7%
H27R	0.8%	1.6%	0.8%
H31	0.3%	0.2%	-0.1%

SOURCE: AEDT 2d and 3f; ESA 2024.



SOURCE: Esri; AEDT 2d and 3f; ESA, 2024.
AEDT = Aviation Environmental Design Tool.
DNL = Day-Night Average Sound Level.
dB = Decibel.

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Figure 5
2017 and 2023 DNL Contours

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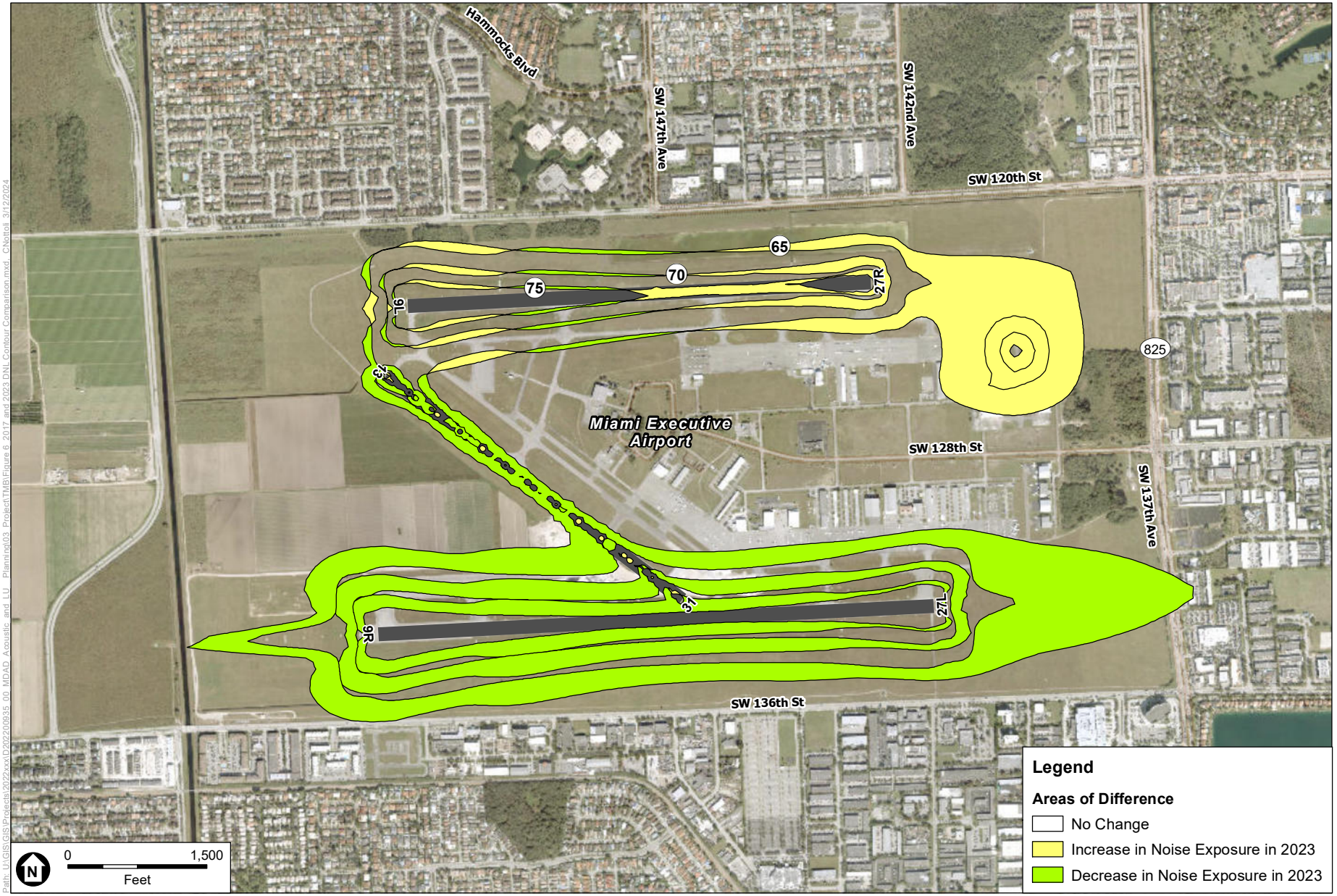

SOURCE: Esri; AEDT 2d and 3f; ESA, 2024.
AEDT = Aviation Environmental Design Tool.

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Figure 6
2017 and 2023 DNL Contour Comparison

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Appendix A-1

Departure Operations and Stage Length Percentages

AEDT ANP	Total Operations	Departure Stage Length Percentage									
		1	2	3	4	5	6	7	8	9	M
BD-700-1A10	186.93	48%	32%	12%	5%	0%	4%	0%	0%	0%	0%
BEC58P	4,829.32	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C12	14.00	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C130	14.46	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CIT3	191.37	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CL600	708.97	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA172	30,503.41	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA182	1,354.63	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA208	4,197.31	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA20T	835.82	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA500	142.51	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA510	553.76	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA525C	1,007.77	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA55B	1,823.66	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA560U	360.35	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA560XL	908.01	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA680	906.61	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CNA750	515.08	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
COMSEP	3,286.89	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DHC6	1,292.26	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
ECLIPSE500	370.53	83%	17%	0%	0%	0%	0%	0%	0%	0%	0%
EMB145	3.50	6%	89%	6%	0%	0%	0%	0%	0%	0%	0%
FAL20	21.69	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
FAL900EX	338.49	45%	34%	15%	4%	2%	<1%	0%	0%	0%	0%
GASEPF	7,371.54	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
GASEPV	6,150.88	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
GIV	287.06	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
GV	195.45	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
LEAR35	1,313.15	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
MU3001	350.17	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PA30	982.32	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%

SOURCE: MDAD ANOMS, 2023; ESA, 2024.

Appendix A-2

2023 Annual Operations

	Arrival			Departure			Touch and Gos			
AEDT ANP	Day	Night	Total	Day	Night	Total	Day	Night	Total	Subtotal
					Fixed-Wing					
BD-700-1A10	171.77	15.16	186.93	180.19	6.74	186.93	-	-	-	373.85
BEC58P	4,695.17	134.15	4,829.32	4,722.23	107.09	4,829.32	2,994.22	47.83	3,042.05	12,700.69
C12	13.25	0.75	14	13.45	0.55	14	-	-	-	28
C130	13.68	0.78	14.46	13.89	0.57	14.46	4.02	0.2	4.22	33.13
CIT3	181.19	10.18	191.37	183.23	8.14	191.37	-	-	-	382.75
CL600	674.95	34.02	708.97	685.39	23.58	708.97	-	-	-	1,417.94
CNA172	27,661.12	2,842.29	30,503.41	29,138.52	1,364.89	30,503.41	84,839.10	3,124.44	87,963.53	148,970.35
CNA182	1,306.37	48.26	1,354.63	1,285.30	69.33	1,354.63	453.67	153.66	607.33	3,316.59
CNA208	4,153.29	44.02	4,197.31	4,145.56	51.75	4,197.31	5.15	0.27	5.42	8,400.04
CNA20T	778.47	57.36	835.82	727.76	108.07	835.82	638.11	190.49	828.6	2,500.25
CNA500	136.7	5.82	142.51	140.48	2.04	142.51	-	-	-	285.03
CNA510	534.37	19.39	553.76	537.48	16.29	553.76	-	-	-	1,107.53
CNA525C	980.42	27.35	1,007.77	985.37	22.39	1,007.77	-	-	-	2,015.54
CNA55B	1,719.88	103.78	1,823.66	1,771.35	52.32	1,823.66	8.59	0.44	9.03	3,656.36
CNA560U	342.34	18.02	360.35	342.03	18.32	360.35	-	-	-	720.71
CNA560XL	869	39.01	908.01	889.69	18.32	908.01	-	-	-	1,816.02
CNA680	886.14	20.48	906.61	887.47	19.15	906.61	-	-	-	1,813.23
CNA750	497.55	17.53	515.08	492.69	22.39	515.08	-	-	-	1,030.16
COMSEP	3,231.10	55.79	3,286.89	3,081.82	205.07	3,286.89	1,002.45	168.3	1,170.75	7,744.52
DHC6	1,240.18	52.08	1,292.26	1,248.58	43.68	1,292.26	25.27	1.22	26.5	2,611.01
ECLIPSE500	366.46	4.07	370.53	366.46	4.07	370.53	-	-	-	741.07
EMB145	3.5	-	3.5	3.5	-	3.5	-	-	-	7
FAL20	20.52	1.17	21.69	20.84	0.85	21.69	6.89	0.34	7.23	50.6
FAL900EX	318.99	19.49	338.49	325.01	13.47	338.49	-	-	-	676.97
GASEPF	6,807.91	563.64	7,371.54	7,161.52	210.02	7,371.54	10,979.44	460.98	11,440.42	26,183.51
GASEPV	6,002.38	148.5	6,150.88	6,091.82	59.06	6,150.88	2,839.07	21.95	2,861.02	15,162.77
GIV	267.17	19.9	287.06	270.77	16.29	287.06	-	-	-	574.12
GV	176.33	19.12	195.45	183.23	12.22	195.45	-	-	-	390.89
LEAR35	1,241.57	71.59	1,313.15	1,254.11	59.04	1,313.15	-	-	-	2,626.30
MU3001	345.74	4.43	350.17	346.1	4.07	350.17	-	-	-	700.35
PA30	892.34	89.98	982.32	959.91	22.41	982.32	3,329.32	21.95	3,351.27	5,315.90
					Helicopter					
B206L	1,043.64	31.31	1,074.95	1,040.34	34.61	1,074.95	-	-	-	2,149.90
B212	191.37	22.39	213.77	186.25	27.51	213.77	-	-	-	427.54

	Arrival			Departure			Touch and Gos			
AEDT ANP	**Day**	**Night**	**Total**	**Day**	**Night**	**Total**	**Day**	**Night**	**Total**	**Subtotal**
B407	209.2	10.67	219.88	211.73	8.14	219.88	-	-	-	439.75
H500D	160.84	2.04	162.87	162.87	-	162.87	-	-	-	325.74
R22	223.95	2.04	225.98	218.62	7.37	225.98	-	-	-	451.97
R44	4,322.20	-	4,322.20	4,295.36	26.85	4,322.20	-	-	-	8,644.41
SA330J	1,085.13	317.6	1,402.73	1,125.65	277.08	1,402.73	-	-	-	2,805.46
SA350D	588.37	93.65	682.02	612.87	69.16	682.02	-	-	-	1,364.05

SOURCE: MDAD ANOMS, 2023; ESA, 2024.

Appendix A-3

2023 Flight Track Utilization

2023 Arrival Flight Track Utilization			2023 Departure Flight Track Utilization			2023 Touch and Go Flight Track Utilization		
Runway	**Track ID**	**Day/Night**	**Runway**	**Track ID**	**Day/Night**	**Runway**	**Track ID**	**Day/Night**
09L	09LA01	65.9%	09L	09LD01	40.3%	09L	09LT01	100.0%
	09LA02	25.6%		09LD02	59.7%		**Total**	**100.0%**
	09LA03	8.5%		**Total**	**100.0%**	09R	09RT01	100.0%
	Total	**100.0%**	09R	09RD01	49.1%		**Total**	**100.0%**
09R	09RA01	74.5%		09RD02	42.4%	13	13T01	100.0%
	09RA02	25.5%		09RD03	8.5%		**Total**	**100.0%**
	Total	**100.0%**		**Total**	**100.0%**	27L	27LT01	100.0%
13	13A01	40.7%	13	13D01	34.4%		**Total**	**100.0%**
	13A02	33.9%		13D02	43.7%	27R	27RT01	100.0%
	13A03	25.4%		13D03	21.9%		**Total**	**100.0%**
	Total	**100.0%**		**Total**	**100.0%**	31	31T01	100.0%
27L	27LA01	57.6%	27L	27LD01	22.8%		**Total**	**100.0%**
	27LA02	33.9%		27LD02	8.5%			
	27LA03	8.5%		27LD03	25.4%			
	Total	**100.0%**		27LD04	43.3%			
27R	27RA01	40.5%		**Total**	**100.0%**			
	27RA02	51.0%	27R	27RD01	36.0%			
	27RA03	8.5%		27RD02	21.3%			
	Total	**100.0%**		27RD03	25.6%			
31	31A01	18.7%		27RD04	8.5%			
	31A02	25.7%		27RD05	8.5%			
	31A03	25.7%		**Total**	**100.0%**			
	31A04	25.7%	31	31D01	48.9%			
	31A05	4.3%		31D02	34.1%			
	Total	**100.0%**		31D03	17.0%			
H1	H1A1	10%		**Total**	**100.0%**			
	H1A2	10%	H1	H1D1	10%			
	H1A3	40%		H1D2	10%			
	H1A4	40%		H1D3	40%			
	Total	**100.0%**		H1D4	40%			
				Total	**100.0%**			

SOURCE: MDAD ANOMS, 2023; ESA, 2024.

Notes:

1. Jet aircraft are using only straight-in and straight-out flight tracks.