

San Diego County Regional Airport Authority (SDCRAA) Flight Procedure Evaluation Technical Advisory Committee and Citizen Advisory Committee Meeting #5

San Diego International Airport

March 28, 2019

Agenda

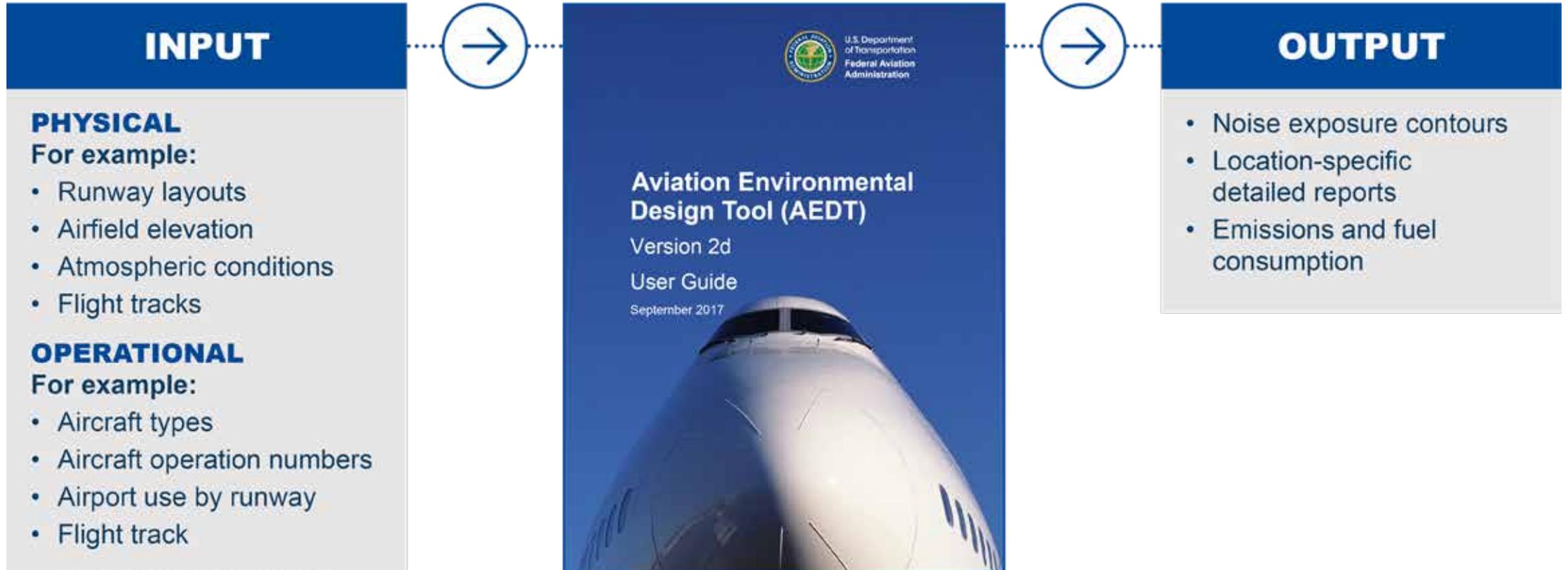
- § Meeting Goals
- § Noise Screening Methodology
- § Nighttime Departure Final Concept Designs
- § Daytime Departure Final Concept Design
- § Daytime/Nighttime Arrival Final Concept Design

Meeting Goals

- § Understand noise screening methodology
- § Review noise screening results of final design concepts
- § Gather input on recommendations

Noise Screening Methodology - AEDT

§ FAA Aviation Environmental Design Tool (AEDT) 2d noise model



Noise Screening

- § **Intent:** Identify and estimate potential decrease or increase in noise caused by implementing a proposed concept RNAV design procedure
- § **Approach:** Capture primary jet aircraft noise source from SDIA over community areas where proposed concepts are designed to reduce noise
- § **Application:** Provide indications of potential changes in CNEL related to jet traffic subject to change as a result of a proposed concept.

Note: Results do not reflect the cumulative average annual day flight patterns and operations at SDIA; therefore not intended to represent overall existing noise exposure levels

Noise Screening Methodology - Baseline

- § **Source:** Authority's Airport Noise and Operations Management System (ANOMS) flight operations and radar track data: May 2017 to December 2017
- § **Operation focus:** Jet departures from Runway 27 and jet arrivals from northwest to Runway 27
- § **Traffic flow focus:**
 - Northbound departures (e.g., PADRZ RNAV SID, CWARD RNAV SID, PEBLE SID and FAA ATC radar vectoring)
 - Eastbound departures (e.g., ZZOOO RNAV SID, BORDER SID, and FAA ATC radar vectoring)
 - Arrivals from northwest (e.g., COMIX RNAV STAR, HUBRD STAR and FAA ATC radar vectoring)

Noise Screening Methodology - Alternative

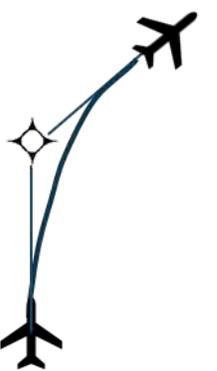
- § **Modify** baseline RNAV noise model tracks to represent proposed final design flight path
- § **Move** baseline RNAV operations to alternative RNAV noise model track
- § **Maintain** non-RNAV noise model tracks and operations on tracks
- § **Compare** CNEL values between Baseline and Alternative scenarios

Modeled Scenarios

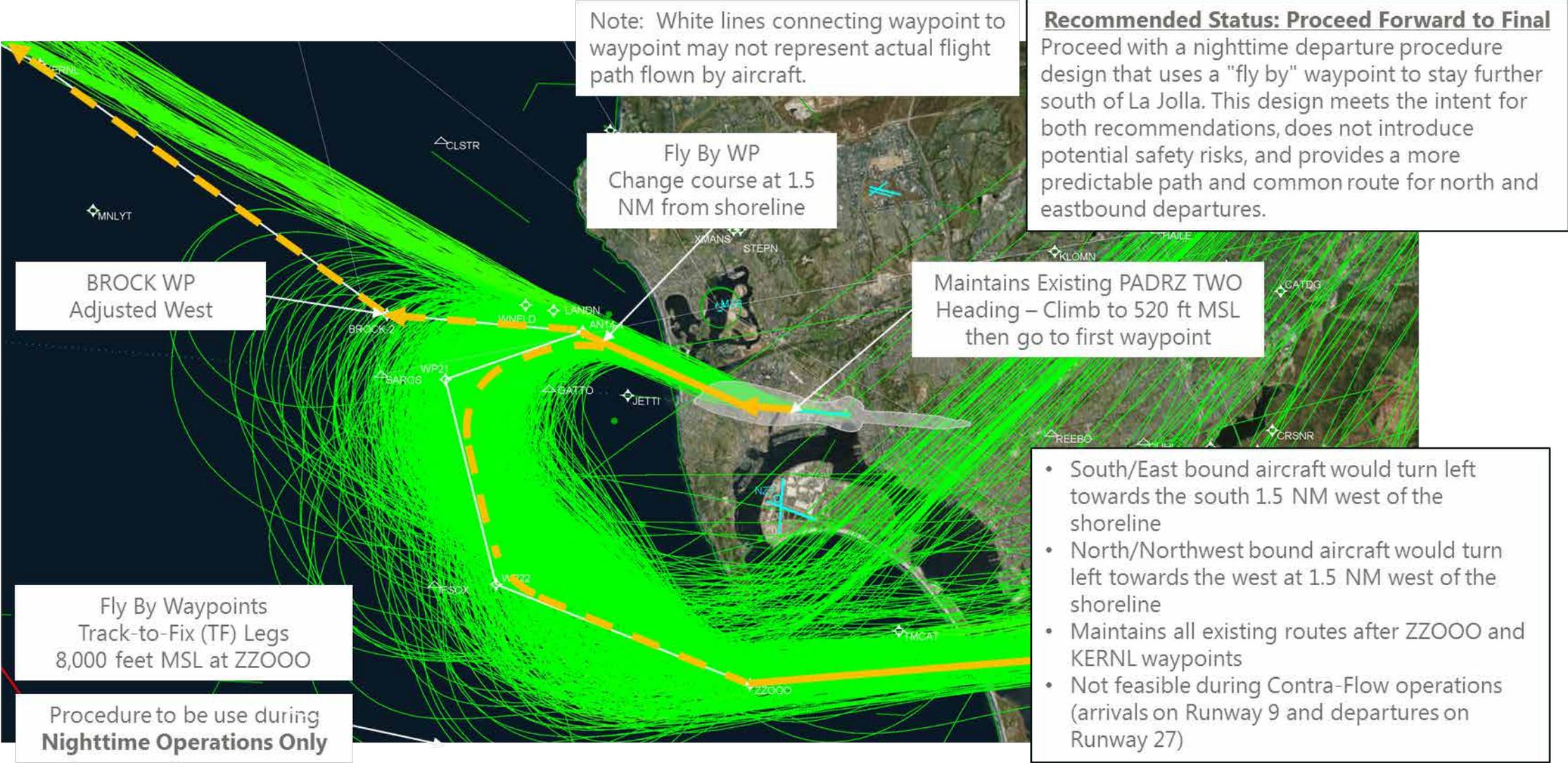
- § **Scenario 1:** Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 (Nighttime Departures)
- § **Scenario 2:** Recommendation 14 Alt 4 and Recommendation 15 Alt 4 (Nighttime Departures)
- § **Scenario 3:** Recommendation 15 – Alt 1 Extend JETTI Waypoint 2 NM West (Daytime Departures)
- § **Scenario 4:** Recommendation 16 – Alt 1 Version 3 (Daytime/Nighttime Arrivals)
- § All scenarios include primary jet daytime, evening and nighttime operations and flight patterns over focused community areas
- § Scenarios do not represent cumulative average annual day noise exposure levels

Nighttime Departures

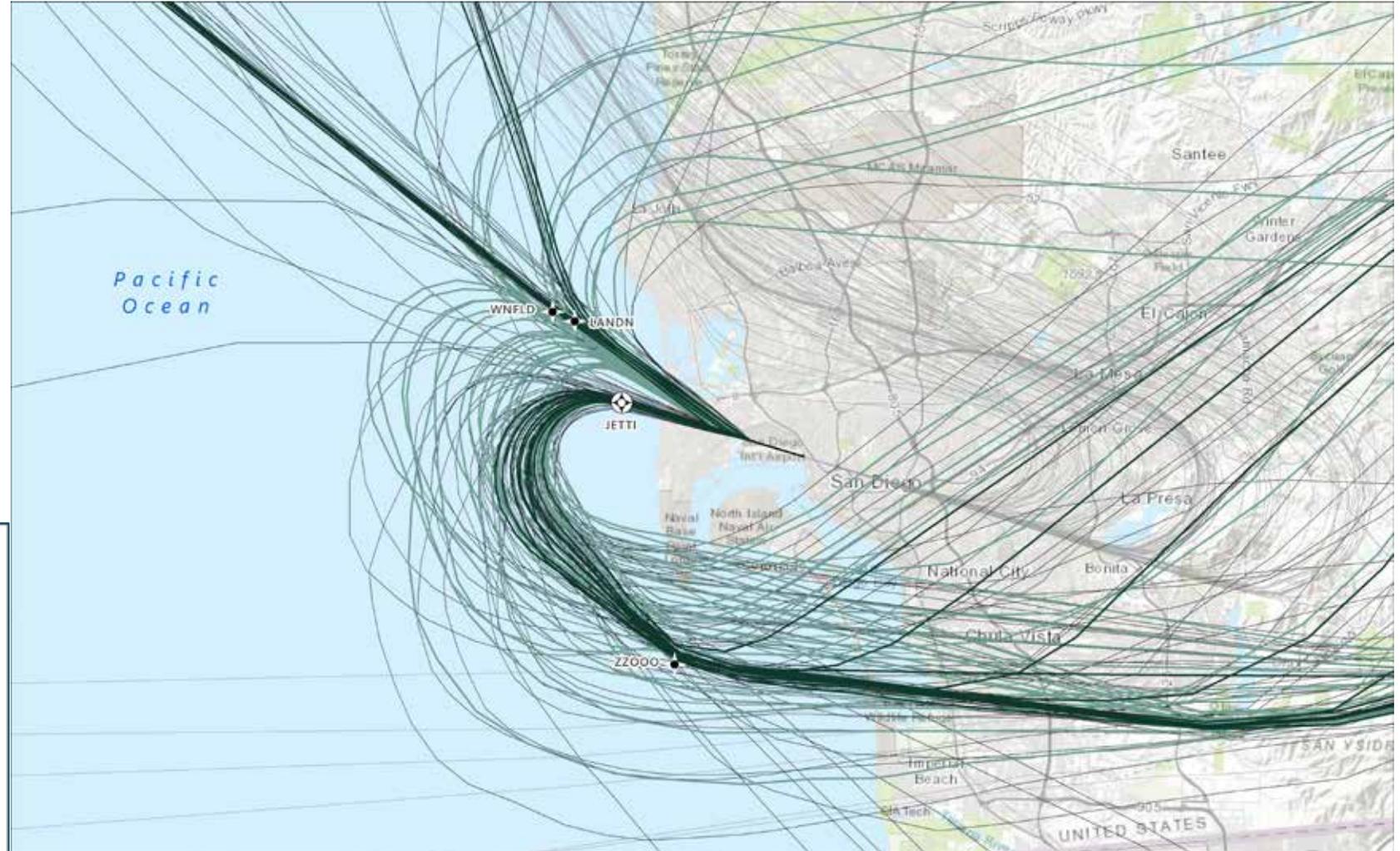
Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – Final Design



Fly By Waypoint



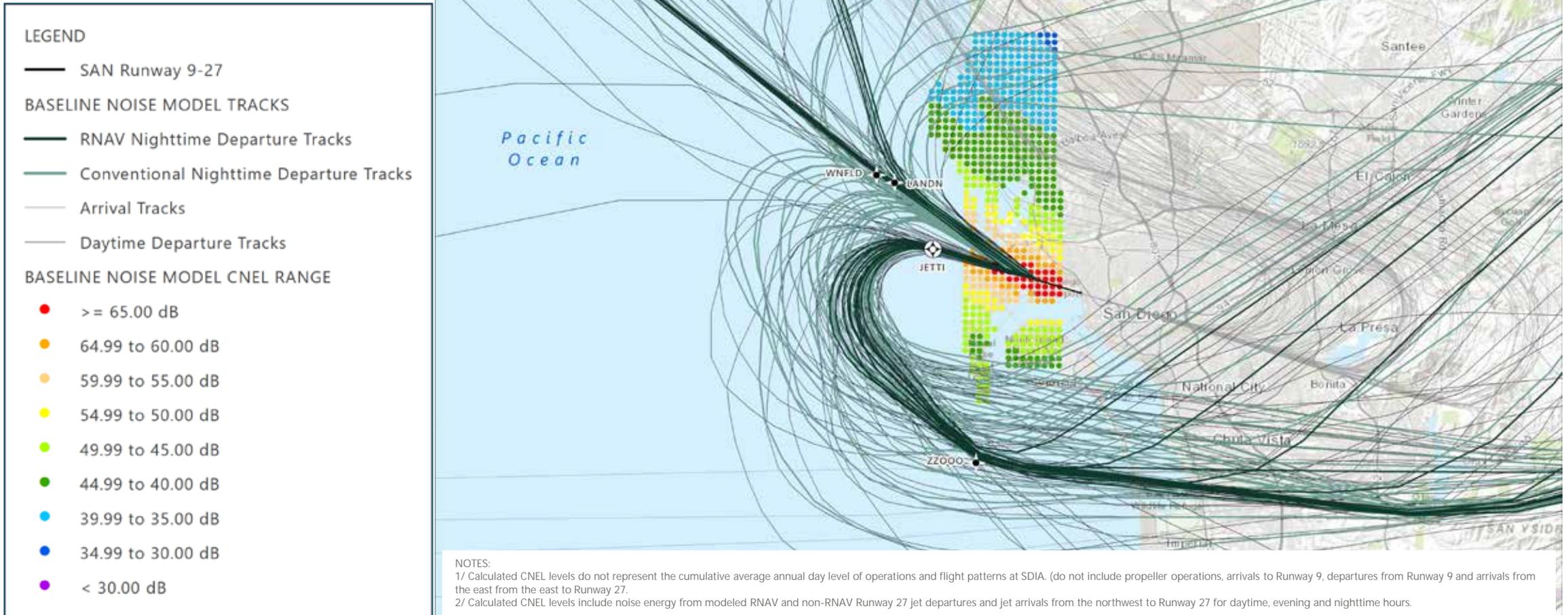
Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – AEDT Baseline Noise Model Tracks



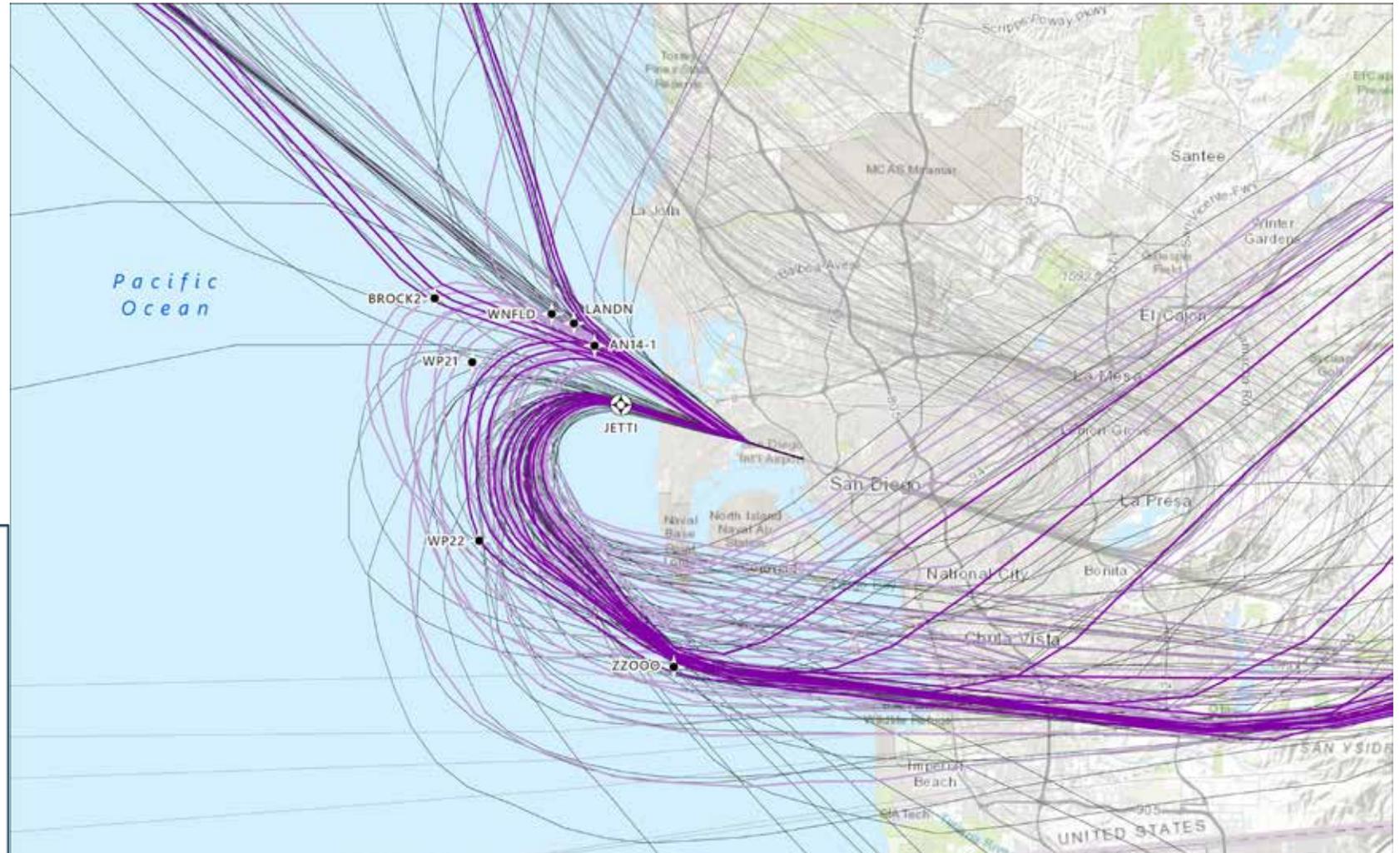
LEGEND

- SAN Runway 9-27
- BASELINE NOISE MODEL TRACKS**
- RNAV Nighttime Departure Tracks
- Conventional Nighttime Departure Tracks
- Arrival Tracks
- Daytime Departure Tracks

Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – AEDT Baseline Noise Model Tracks and CNEL Ranges



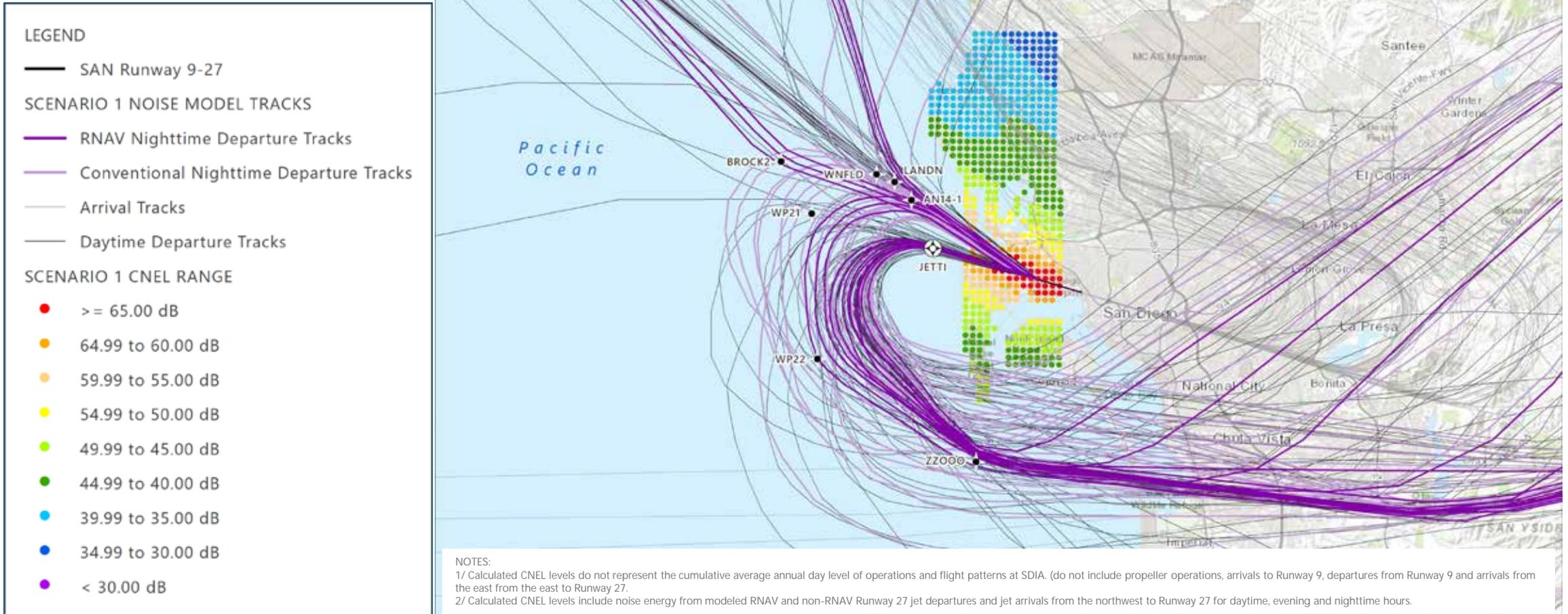
Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – AEDT Scenario 1 Noise Model Tracks



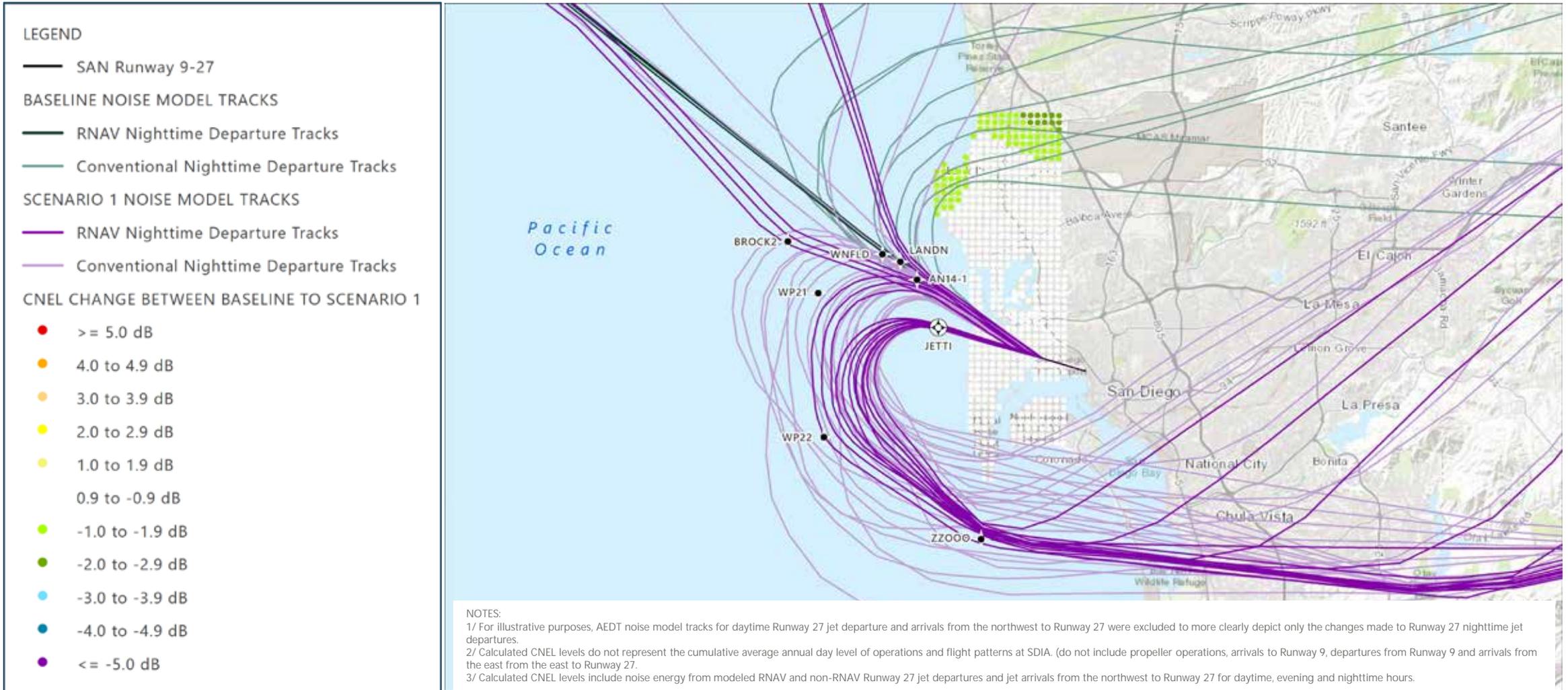
LEGEND

- SAN Runway 9-27
- SCENARIO 1 NOISE MODEL TRACKS**
- RNAV Nighttime Departure Tracks
- Conventional Nighttime Departure Tracks
- Arrival Tracks
- Daytime Departure Tracks

Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – AEDT Scenario 1 Noise Model Tracks and CNEL Ranges



Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – AEDT Scenario 1/Baseline Noise Model Tracks and CNEL Changes



Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – AEDT Scenario 1/Baseline RNAV-Only Noise Model Tracks and CNEL Changes

LEGEND

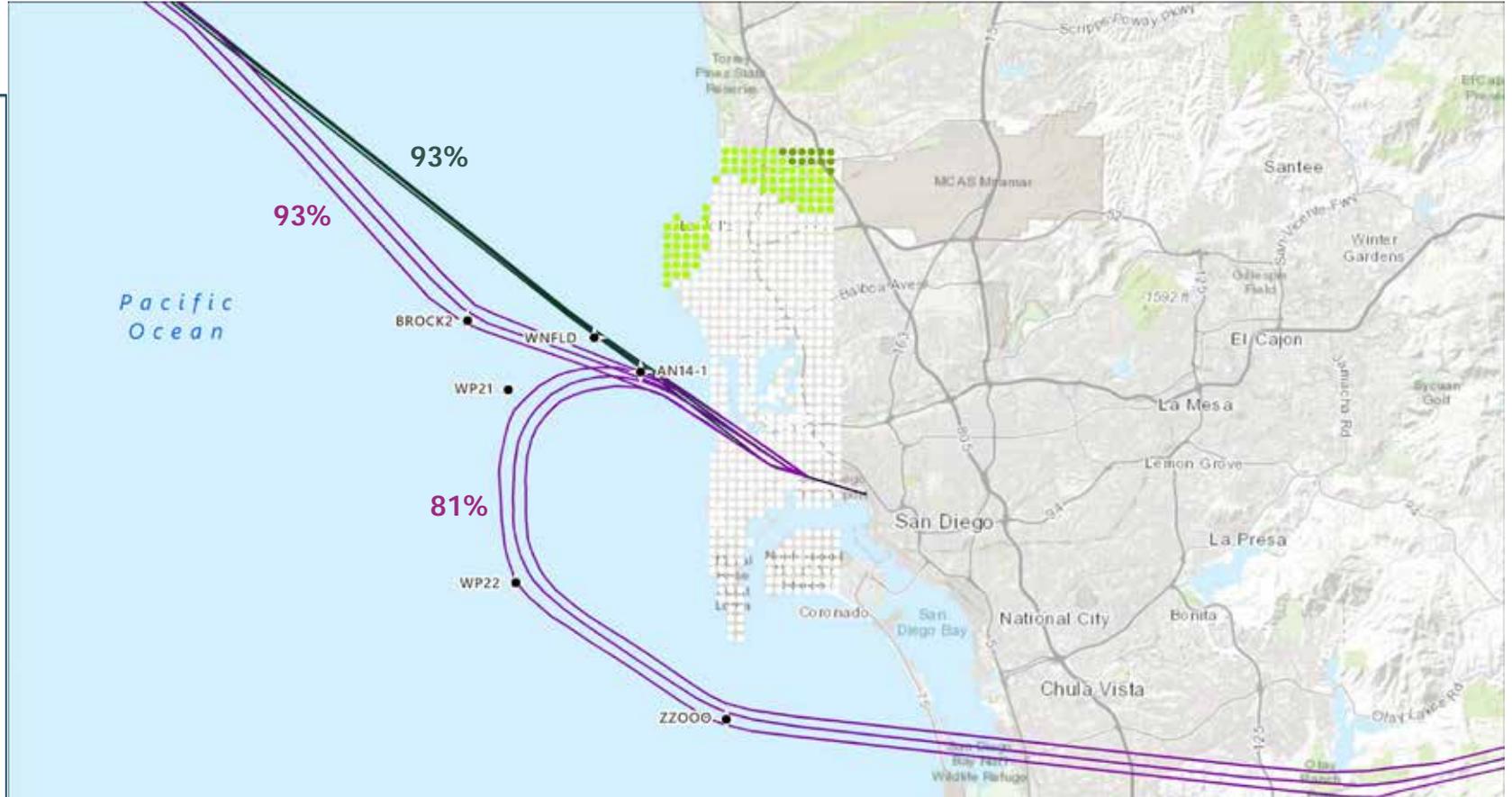
- SAN Runway 9-27
- RNAV Nighttime Departure Tracks
- RNAV Nighttime Departure Tracks

BASELINE NOISE MODEL TRACKS

SCENARIO 1 NOISE MODEL TRACKS

CNEL CHANGE BETWEEN BASELINE TO SCENARIO 1

- ≥ 5.0 dB
- 4.0 to 4.9 dB
- 3.0 to 3.9 dB
- 2.0 to 2.9 dB
- 1.0 to 1.9 dB
- 0.9 to -0.9 dB
- -1.0 to -1.9 dB
- -2.0 to -2.9 dB
- -3.0 to -3.9 dB
- -4.0 to -4.9 dB
- ≤ -5.0 dB



NOTES:
 1/ For illustrative purposes, the modeled RNAV tracks are provided to more clearly depict RNAV procedure changes modeled.
 2/ RNAV use percentage based on total nighttime Runway 27 jet departures on initial right-turn heading by direction.
 3/ Calculated CNEL levels do not represent the cumulative average annual day level of operations and flight patterns at SDIA. (do not include propeller operations, arrivals to Runway 9, departures from Runway 9 and arrivals from the east from the east to Runway 27.
 4/ Calculated CNEL levels include noise energy from modeled RNAV and non-RNAV Runway 27 jet departures and jet arrivals from the northwest to Runway 27 for daytime, evening and nighttime hours.

Composite of Recommendation 14 Alt 1 “Fly By” Version 2 and Recommendation 15 Alt 2 Version 2 – Changes in CNEL - North

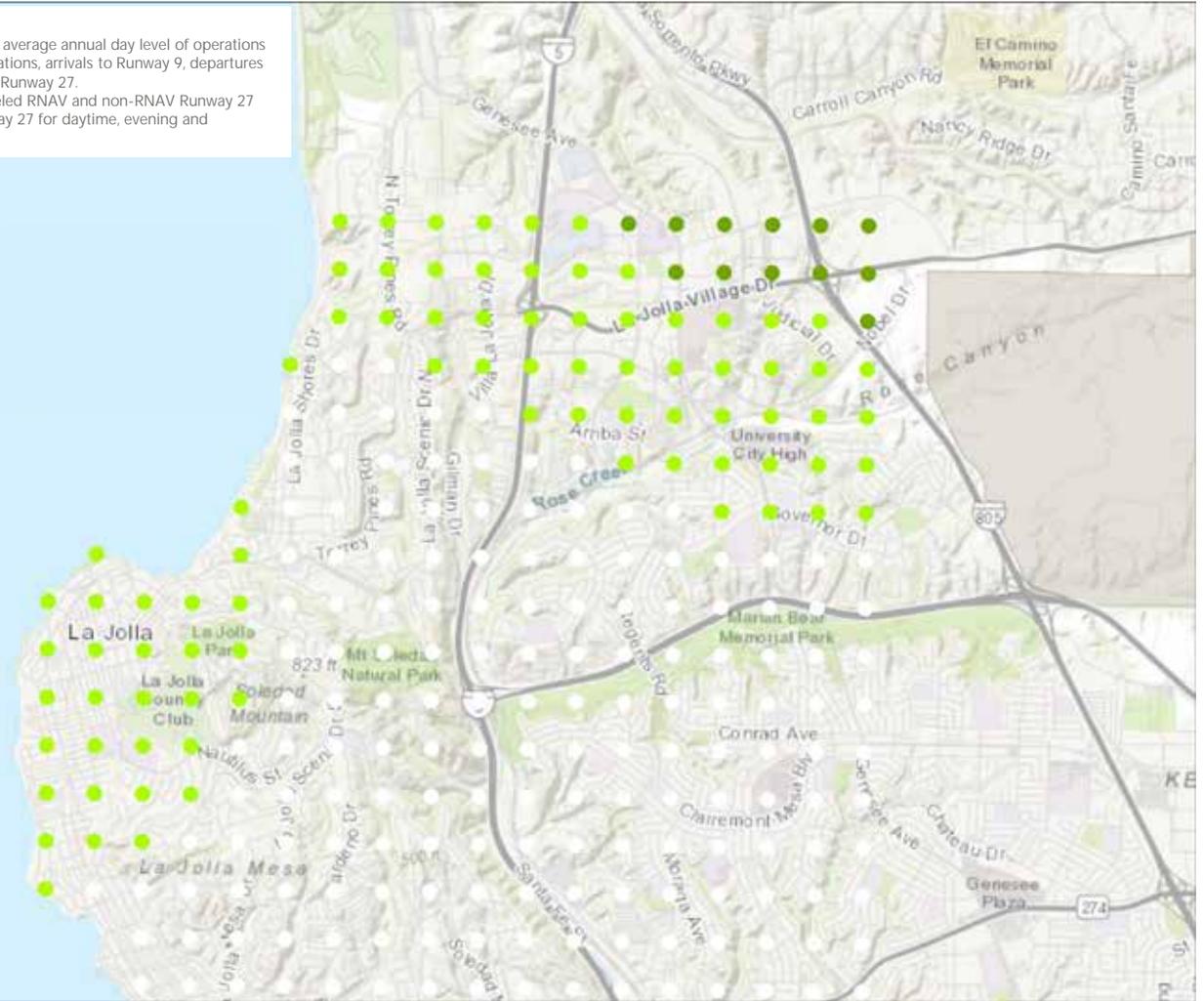
NOTES:
1/ Calculated CNEL levels do not represent the cumulative average annual day level of operations and flight patterns at SDIA. (do not include propeller operations, arrivals to Runway 9, departures from Runway 9 and arrivals from the east from the east to Runway 27.
2/ Calculated CNEL levels include noise energy from modeled RNAV and non-RNAV Runway 27 jet departures and jet arrivals from the northwest to Runway 27 for daytime, evening and nighttime hours.

Pacific
Ocean

LEGEND

CNEL CHANGE BETWEEN BASELINE TO SCENARIO 1

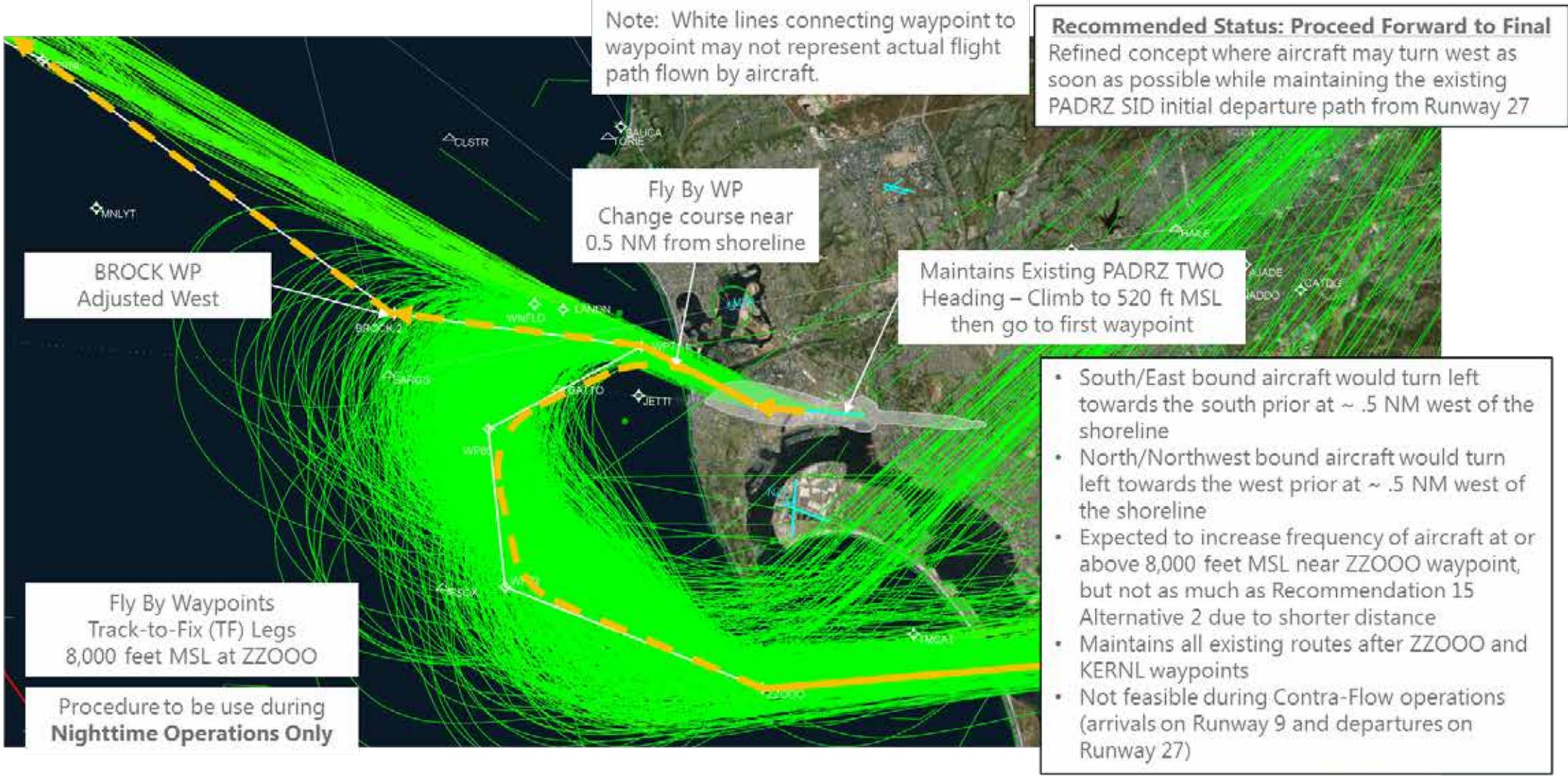
- ≥ 5.0 dB
- 4.0 to 4.9 dB
- 3.0 to 3.9 dB
- 2.0 to 2.9 dB
- 1.0 to 1.9 dB
- 0.9 to -0.9 dB
- -1.0 to -1.9 dB
- -2.0 to -2.9 dB
- -3.0 to -3.9 dB
- -4.0 to -4.9 dB
- ≤ -5.0 dB



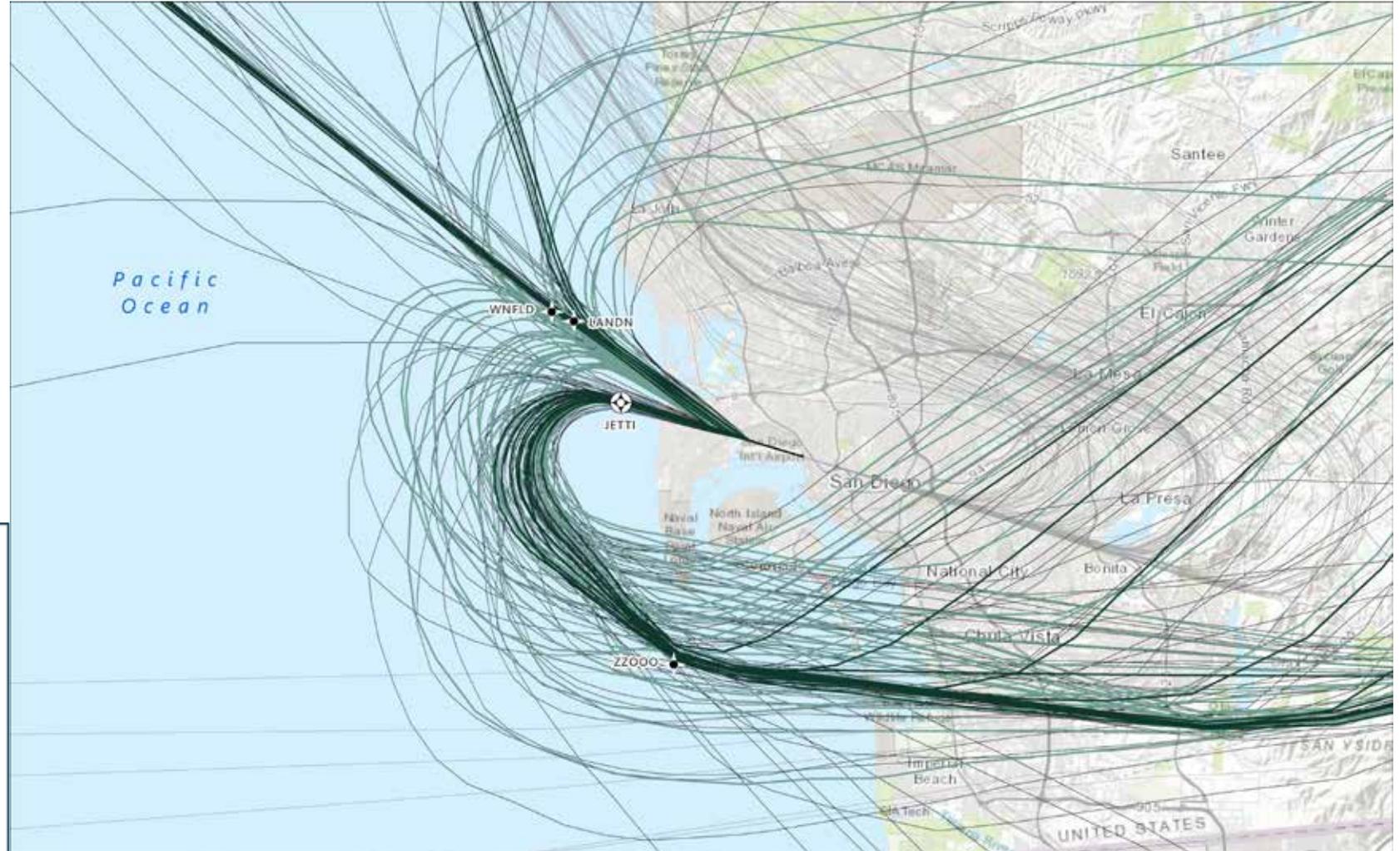
Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – Final Design



Fly By Waypoint



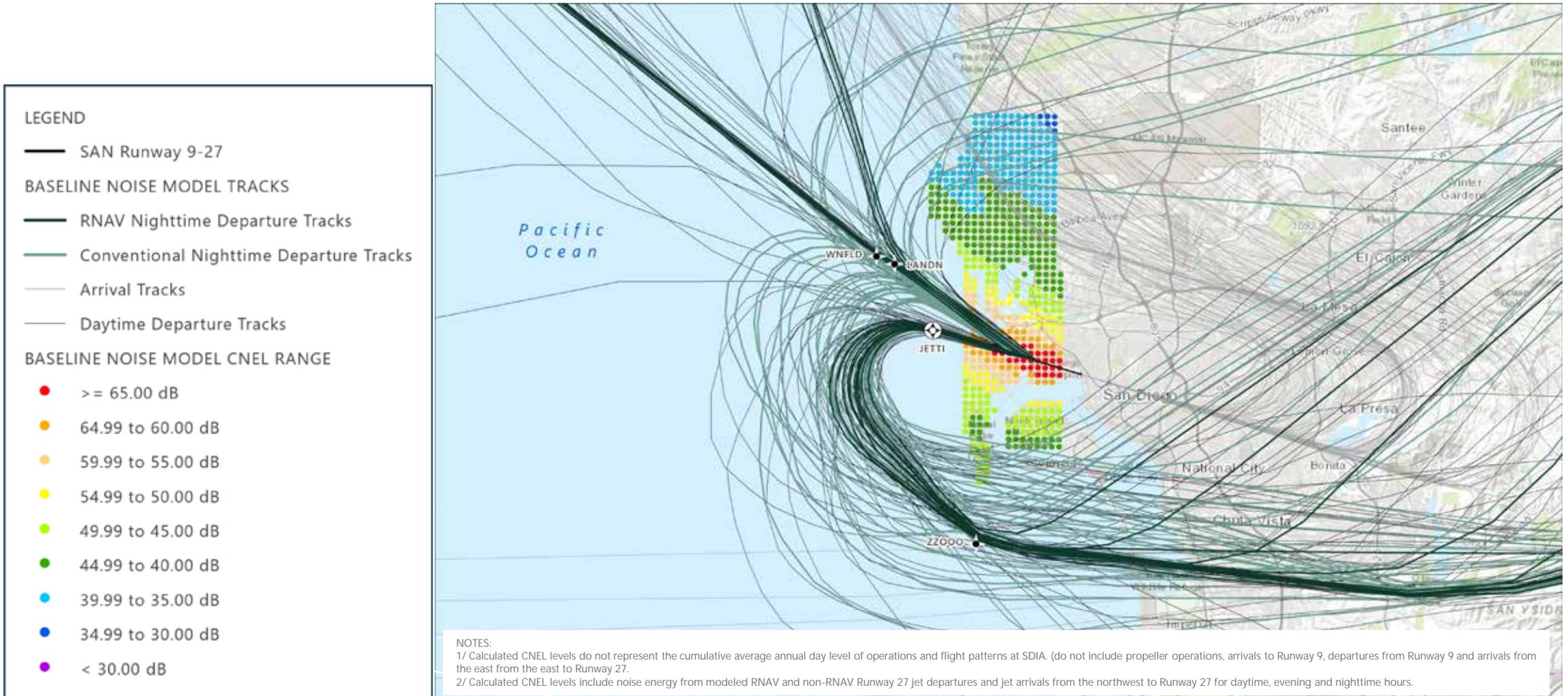
Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – AEDT Baseline Noise Model Tracks



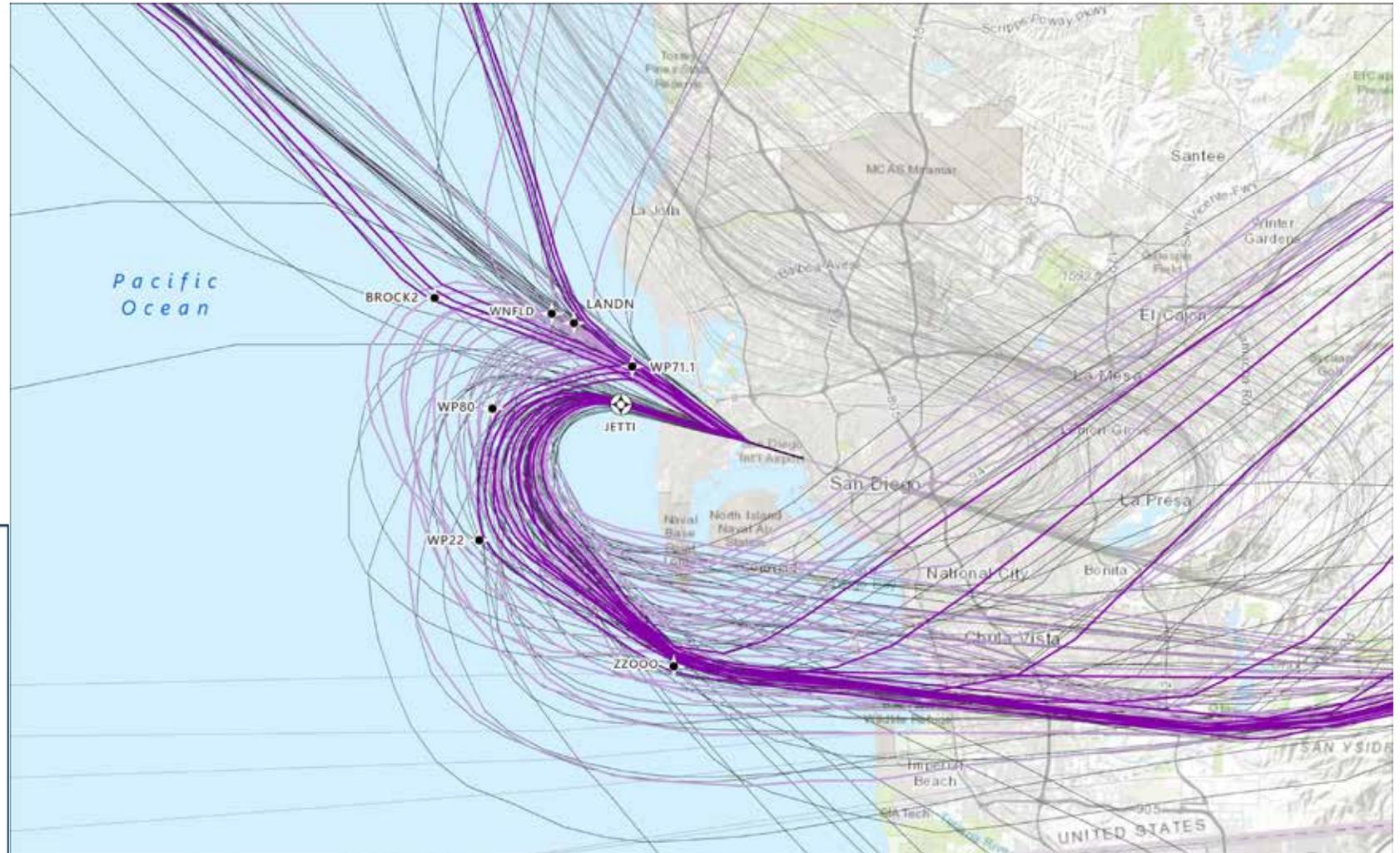
LEGEND

- SAN Runway 9-27
- BASELINE NOISE MODEL TRACKS**
- RNAV Nighttime Departure Tracks
- Conventional Nighttime Departure Tracks
- Arrival Tracks
- Daytime Departure Tracks

Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – AEDT Baseline Noise Model Tracks and CNEL Ranges



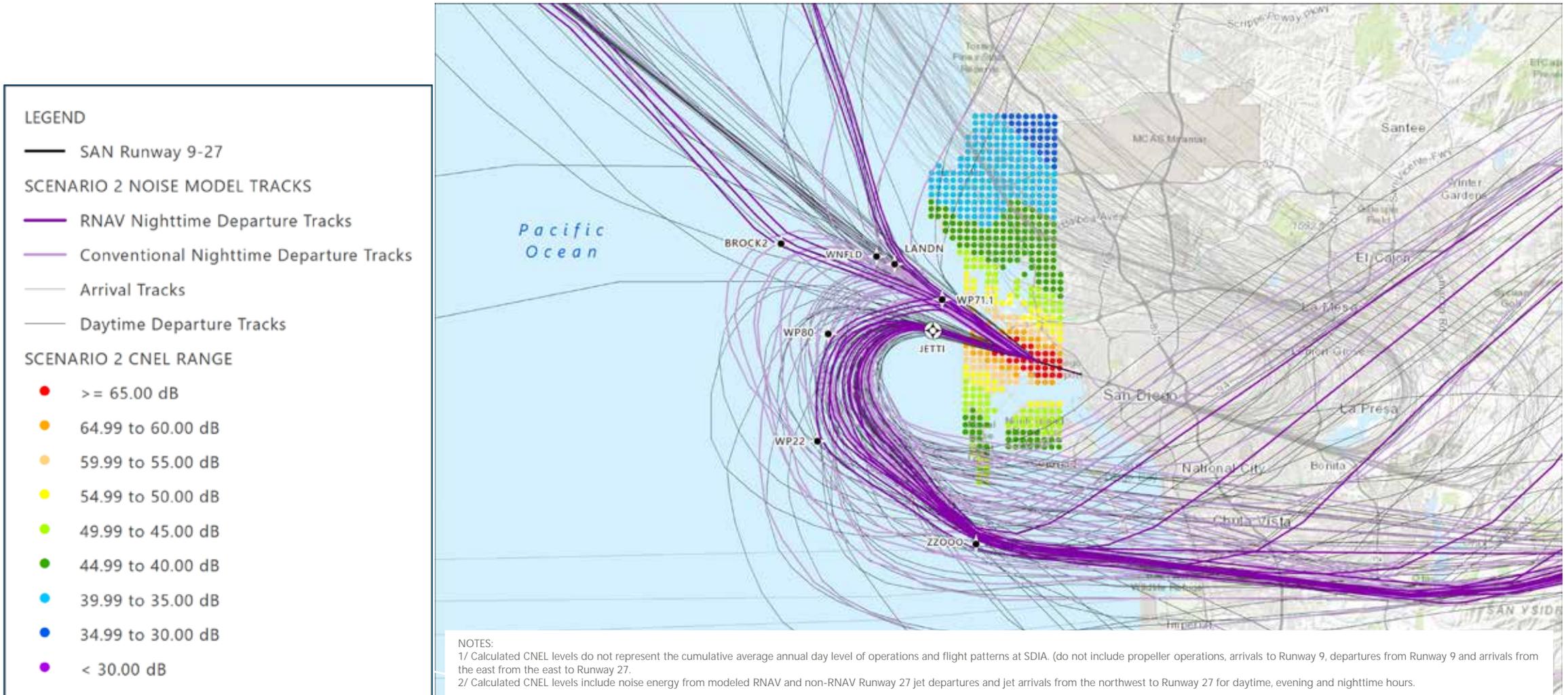
Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – AEDT Scenario 2 Noise Model Tracks



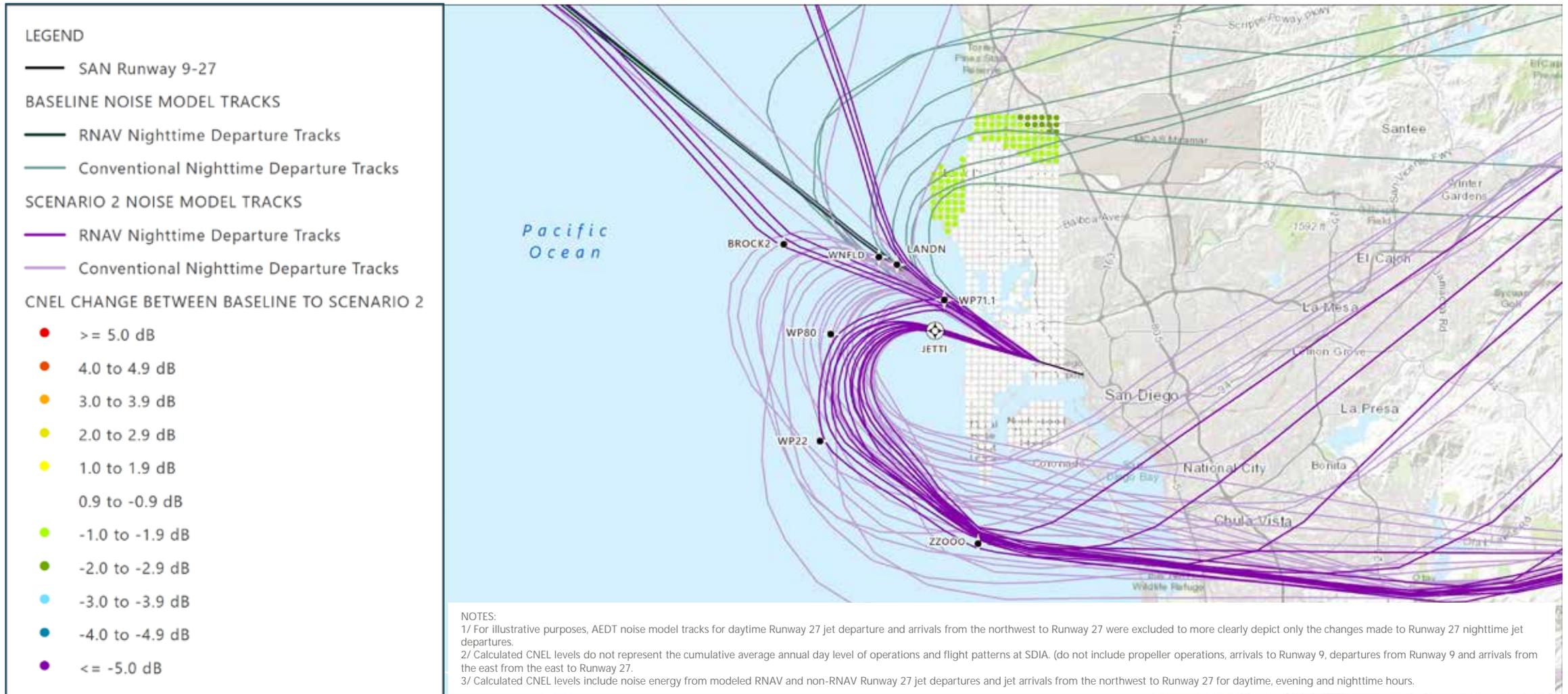
LEGEND

- SAN Runway 9-27
- SCENARIO 2 NOISE MODEL TRACKS**
- RNAV Nighttime Departure Tracks
- Conventional Nighttime Departure Tracks
- Arrival Tracks
- Daytime Departure Tracks

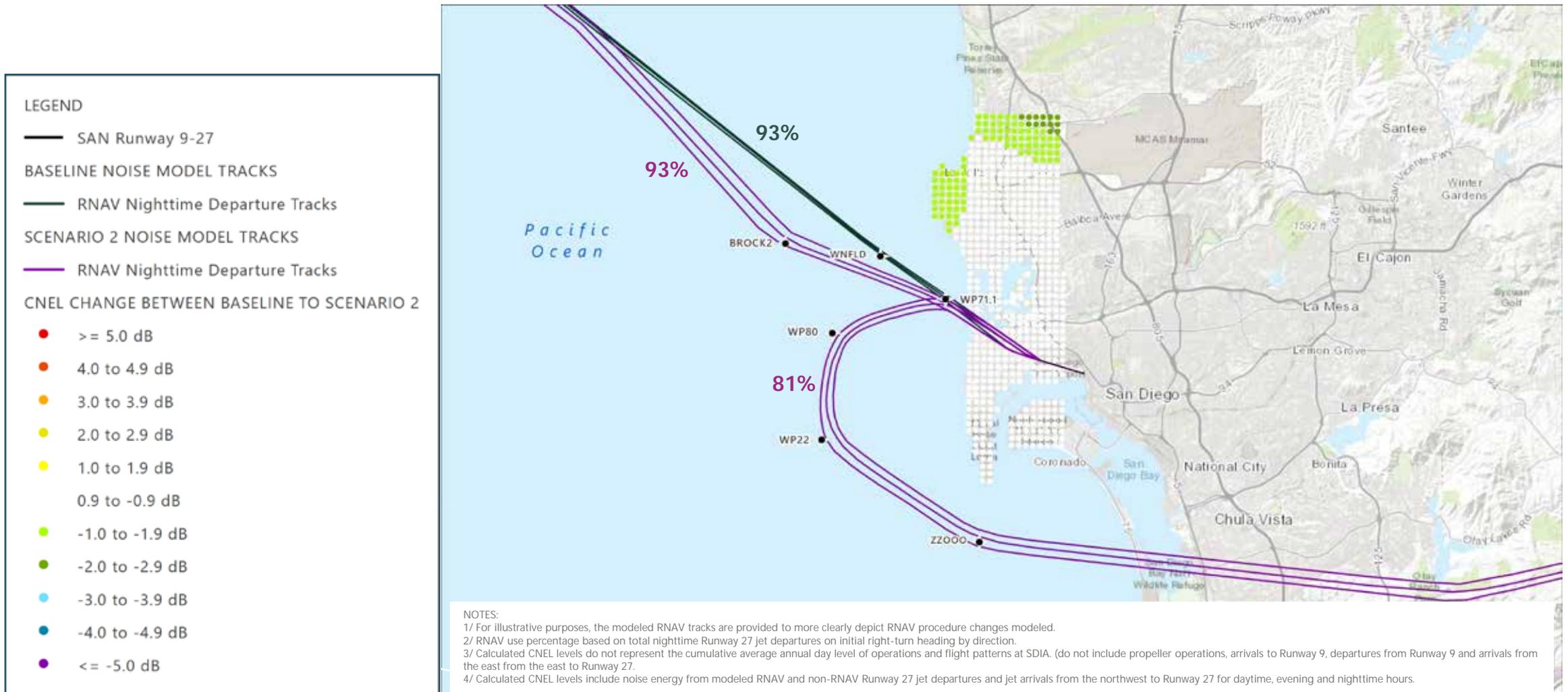
Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – AEDT Scenario 2 Noise Model Tracks and CNEL Ranges



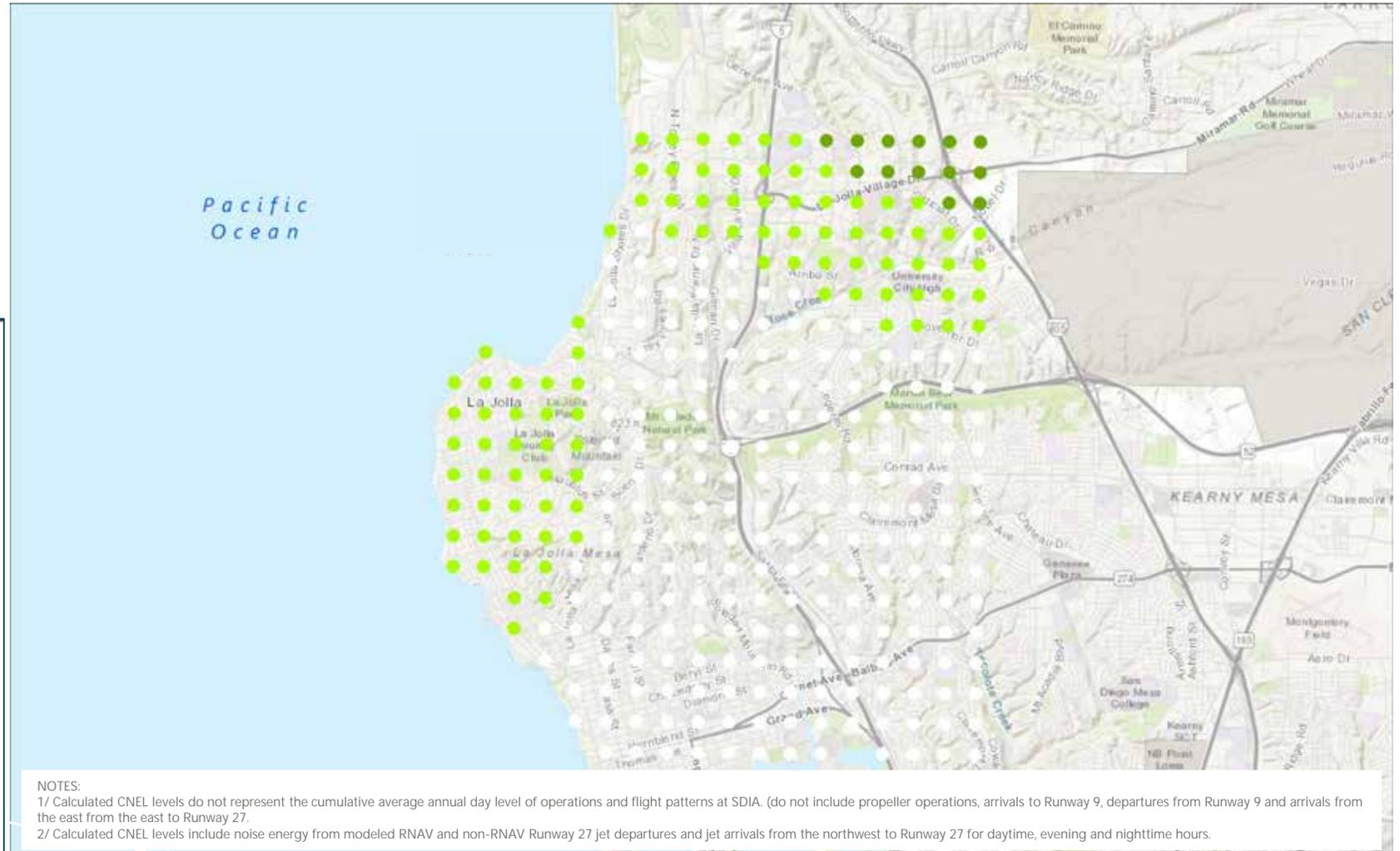
Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – AEDT Scenario 2/Baseline Noise Model Tracks and CNEL Changes



Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – AEDT Scenario 2/Baseline RNAV-Only Noise Model Track and CNEL Changes

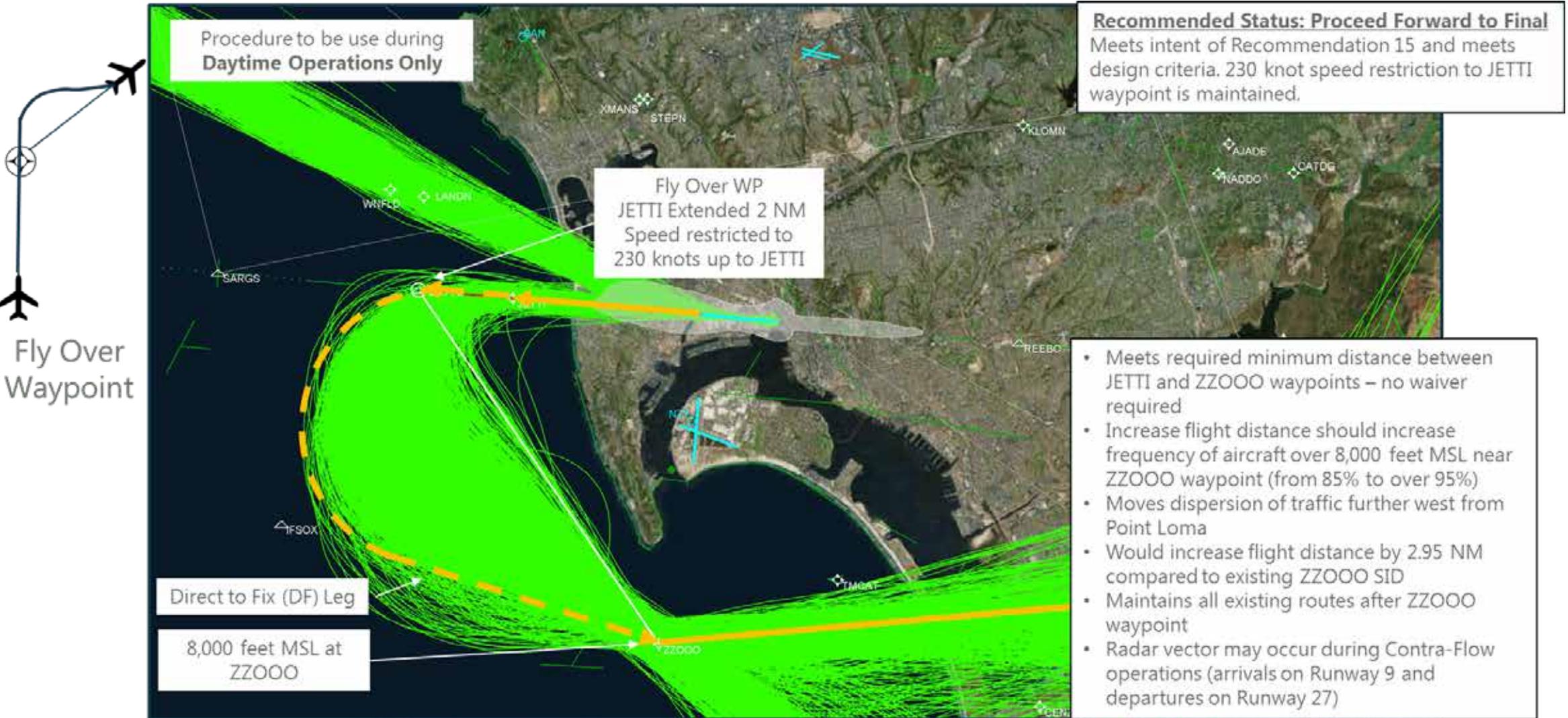


Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4 – Changes in CNEL - North



Daytime Departures

Recommendation 15 Alt 1 Extend JETTI Waypoint 2 NM West - Final Design



Recommendation 15 Alt 1 Extend JETTI Waypoint 2 NM West - AEDT Baseline Noise Model Tracks



LEGEND

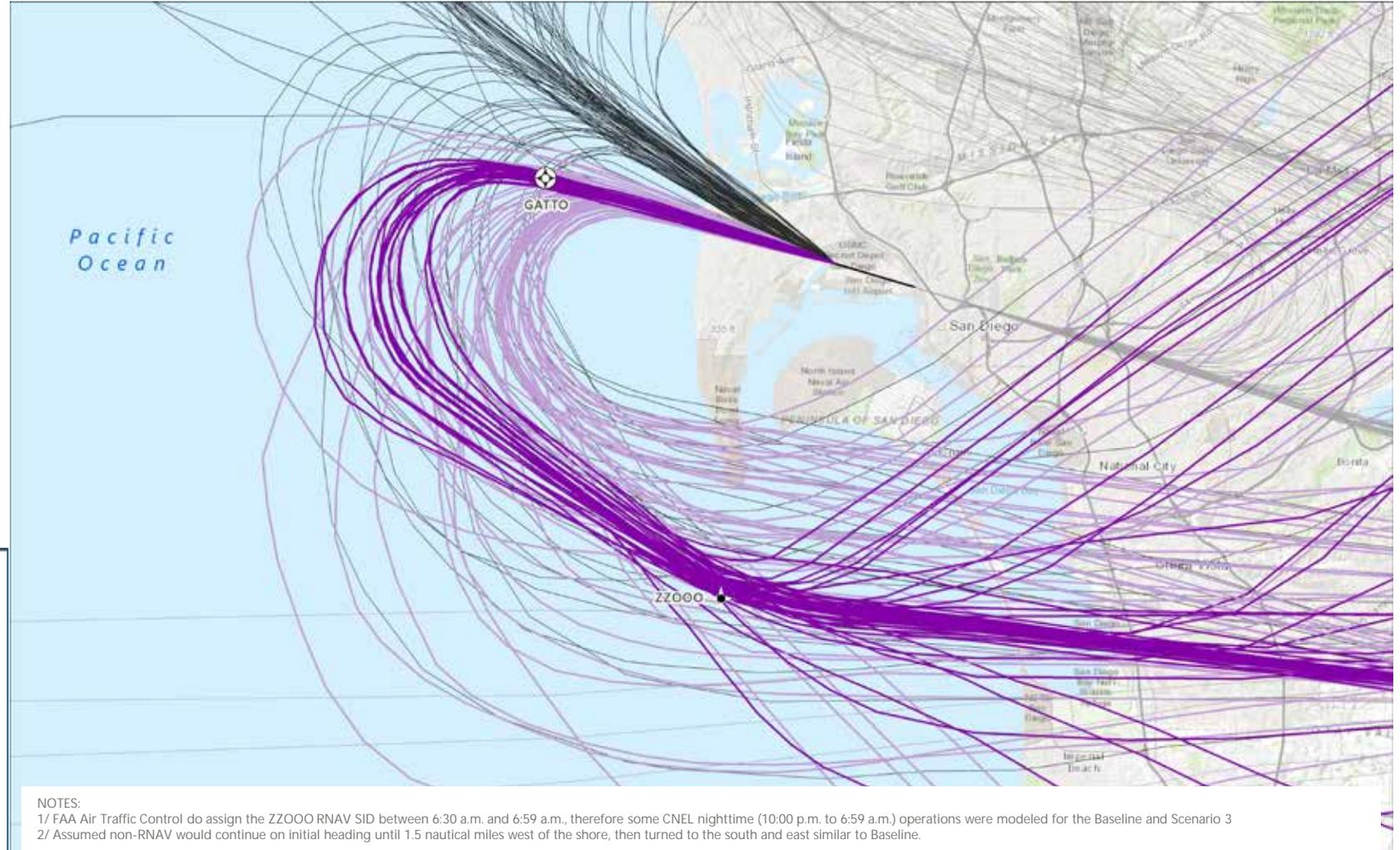
- SAN Runway 9-27
- BASELINE NOISE MODEL TRACKS**
- RNAV East-Southeast Departure Tracks
- Conventional East-Southeast Departure Tracks
- Arrival Tracks
- Departure Tracks

NOTES:
1/ FAA Air Traffic Control do assign the ZZ000 RNAV SID between 6:30 a.m. and 6:59 a.m., therefore some CNEL nighttime (10:00 p.m. to 6:59 a.m.) operations were modeled for the Baseline and Scenario 3

Recommendation 15 Alt 1 Extend JETTI Waypoint 2 NM West - AEDT Baseline Noise Model Tracks and CNEL Ranges



Recommendation 15 Alt 1 Extend JETTI Waypoint 2 NM West - AEDT Scenario 3 Noise Model Tracks



LEGEND

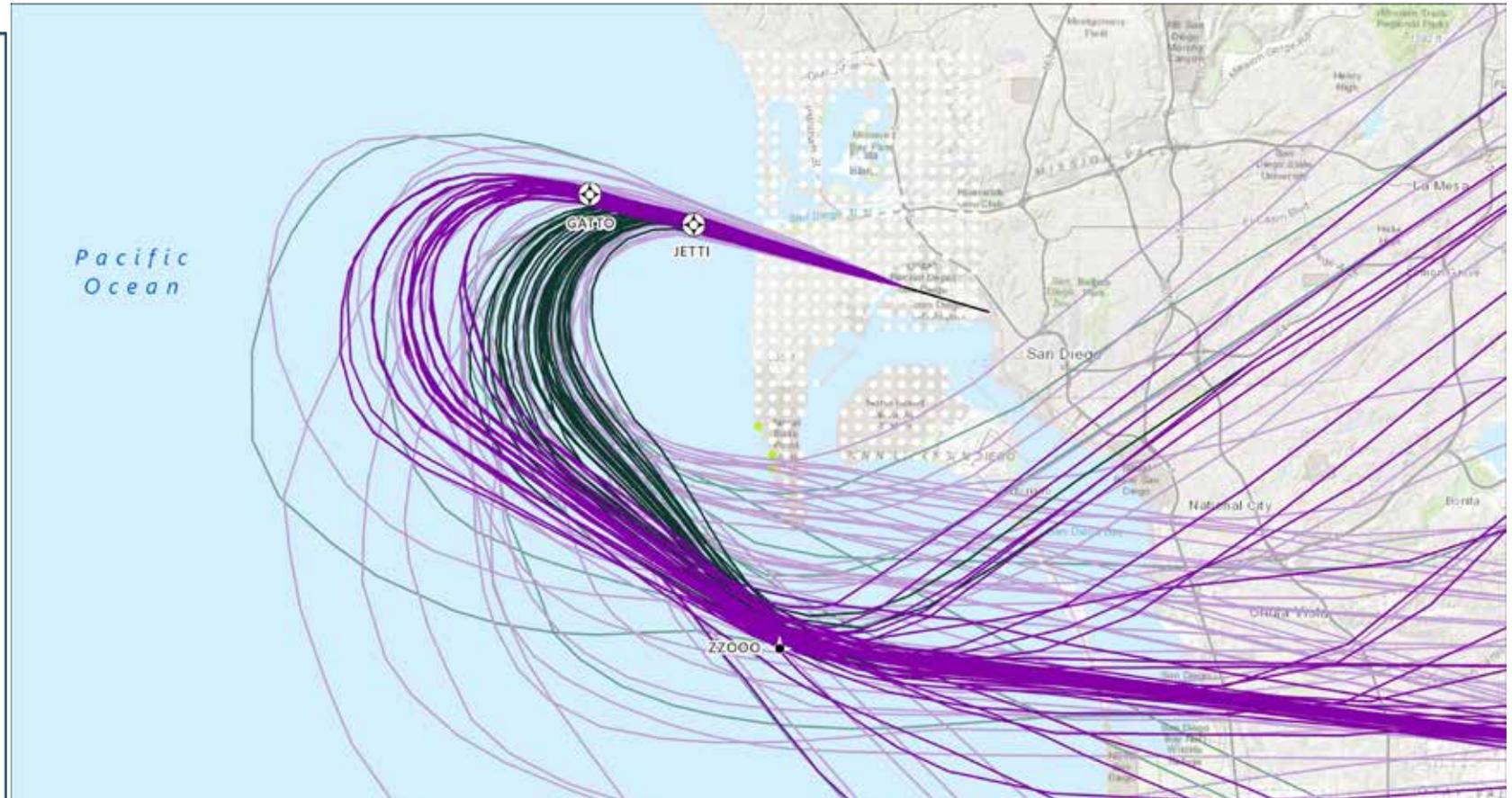
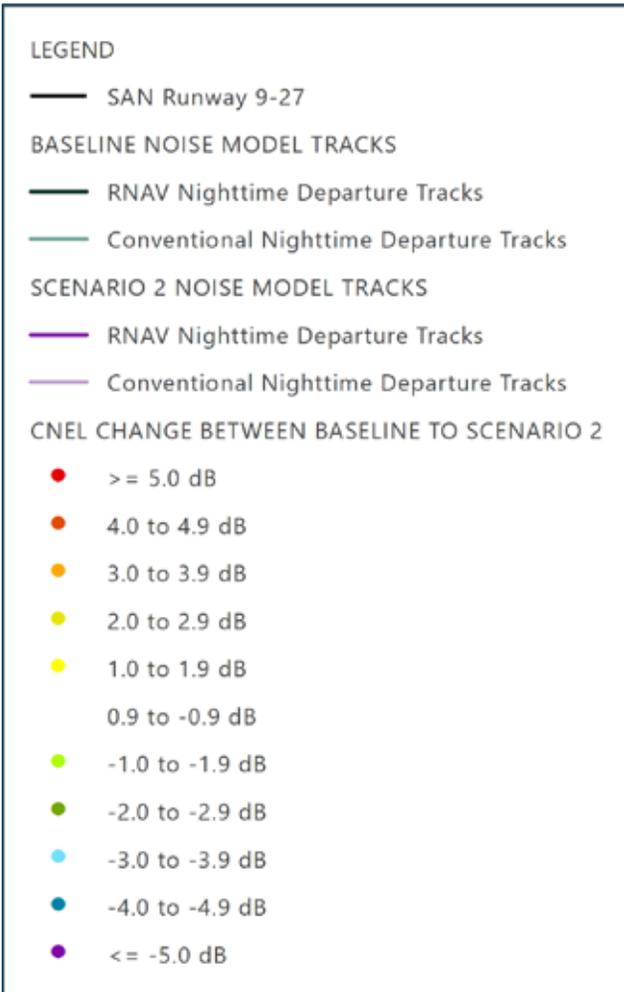
- SAN Runway 9-27
- SCENARIO 3 NOISE MODEL TRACKS**
- RNAV East-Southeast Departure Tracks
- Conventional East-Southeast Departure Tracks
- Arrival Tracks
- Departure Tracks

NOTES:
1/ FAA Air Traffic Control do assign the ZZ000 RNAV SID between 6:30 a.m. and 6:59 a.m., therefore some CNEL nighttime (10:00 p.m. to 6:59 a.m.) operations were modeled for the Baseline and Scenario 3
2/ Assumed non-RNAV would continue on initial heading until 1.5 nautical miles west of the shore, then turned to the south and east similar to Baseline.

Recommendation 15 Alt 1 Extend JETTI Waypoint 2 NM West - AEDT Scenario 3 Noise Model Tracks and CNEL Ranges

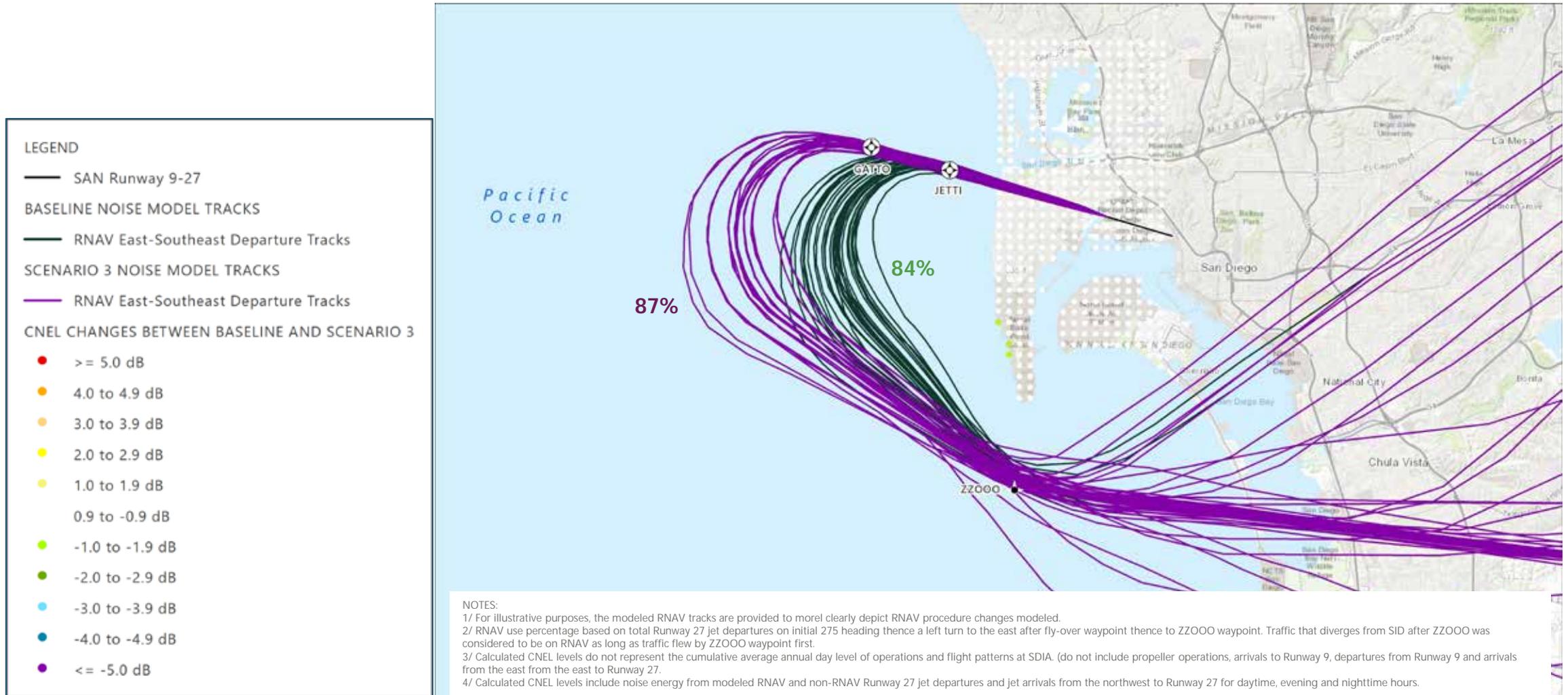


ANAC Noise Recommendation 15 – Alt 1 Extend JETTI Waypoint 2 NM West AEDT Scenario 3/Baseline Noise Model Tracks and CNEL Changes

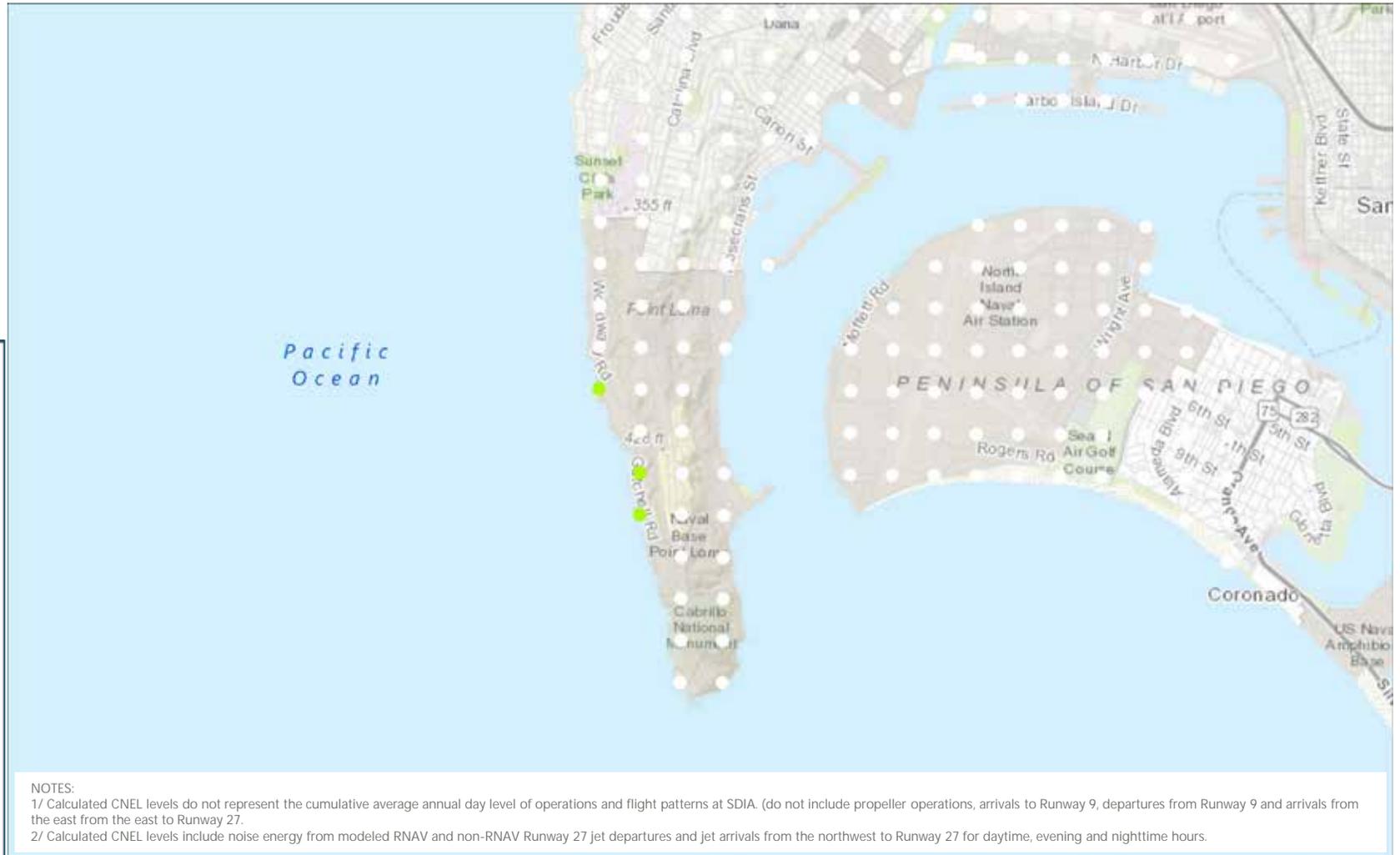


NOTES:
1/ For illustrative purposes, AEDT noise model tracks for Runway 27 jet departures that turn right from Runway 27 then head to the north/northwest or south then east and arrivals from the northwest to Runway 27 were excluded to more clearly depict only the changes made to Runway 27 jet departures that turn left to the south and then to the east.
2/ Calculated CNEL levels do not represent the cumulative average annual day level of operations and flight patterns at SDIA. (do not include propeller operations, arrivals to Runway 9, departures from Runway 9 and arrivals from the east from the east to Runway 27.
3/ Calculated CNEL levels include noise energy from modeled RNAV and non-RNAV Runway 27 jet departures and jet arrivals from the northwest to Runway 27 for daytime, evening and nighttime hours.

ANAC Noise Recommendation 15 – Alt 1 Extend JETTI Waypoint 2 NM West AEDT Scenario 3/Baseline RNAV-Only Noise Model Track and CNEL Changes

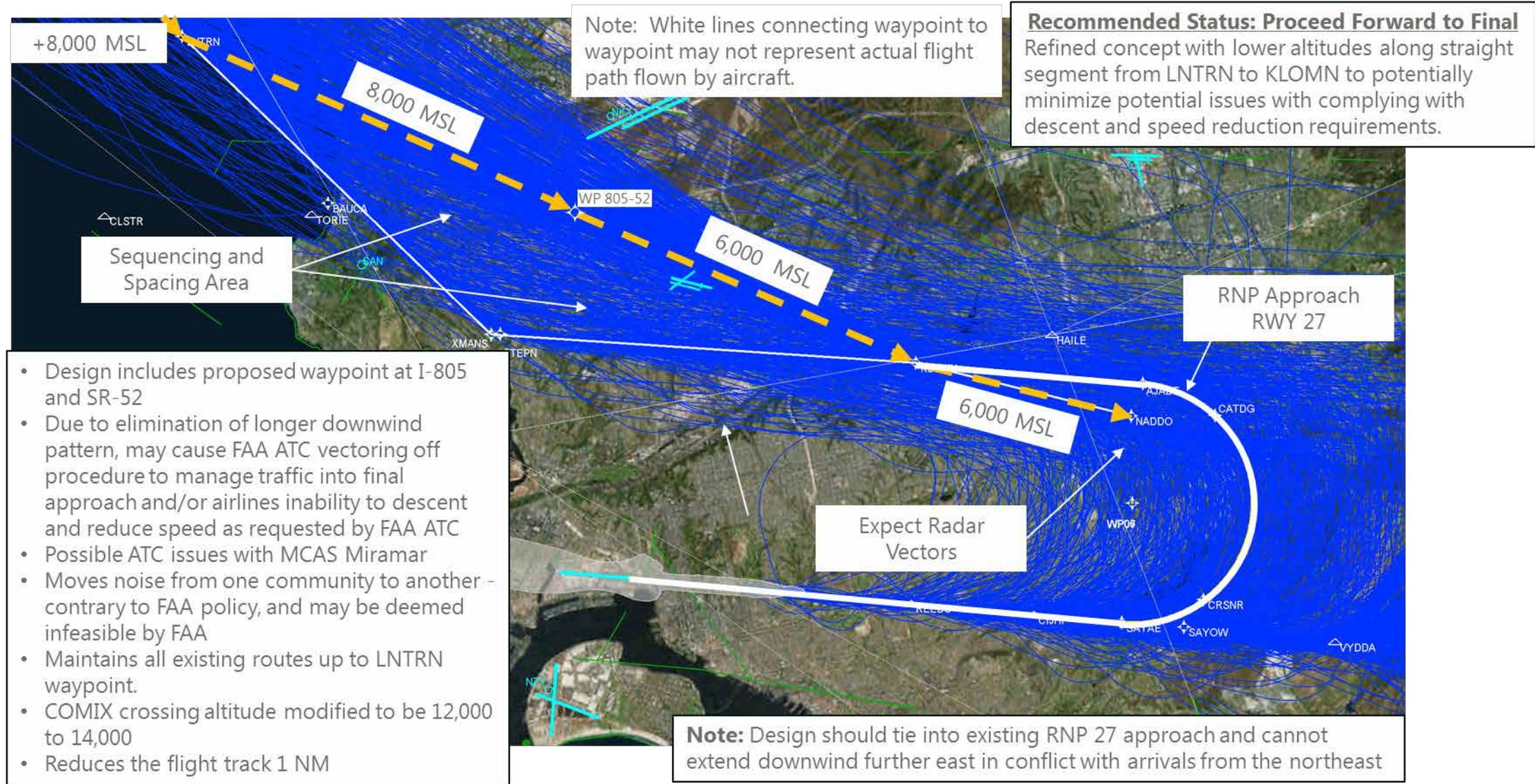


Recommendation 15 Alt 1 Extend JETTI Waypoint 2 NM West - Changes in CNEL - South

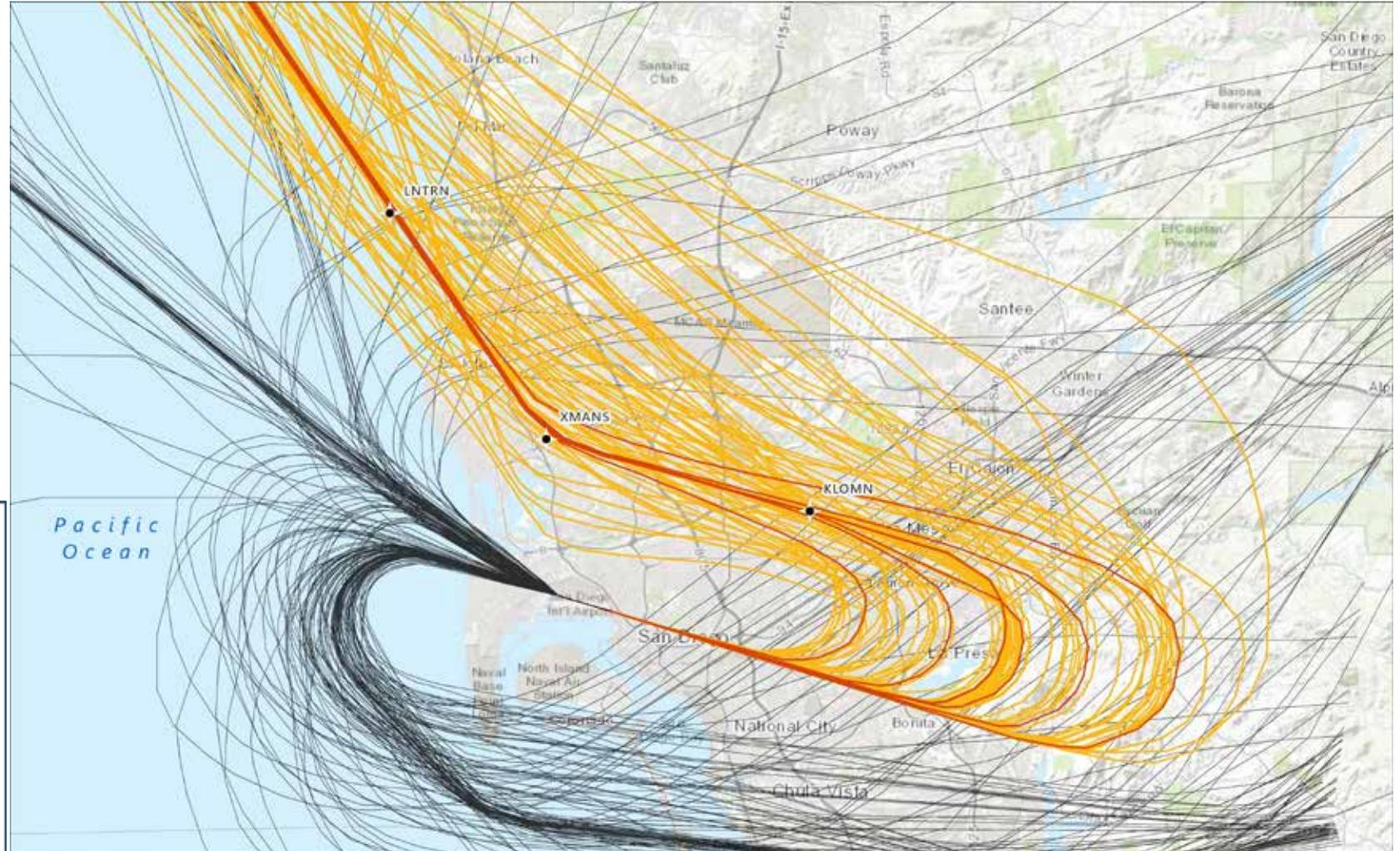


Daytime/Nighttime Arrivals

ANAC Noise Recommendation 16 – Alt 1 Version 3 – Final Design



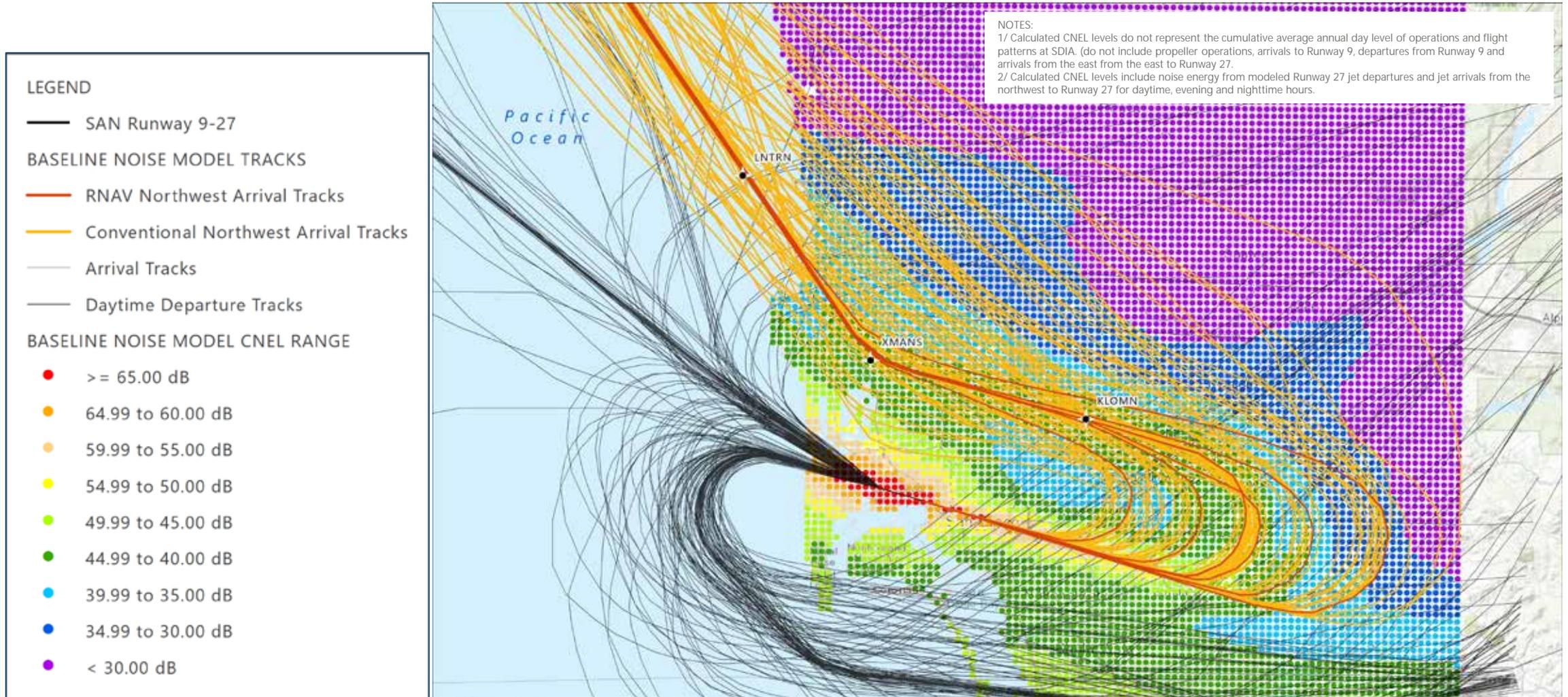
Recommendation 16 Alt 1 Version 3 – AEDT Baseline Noise Model Tracks



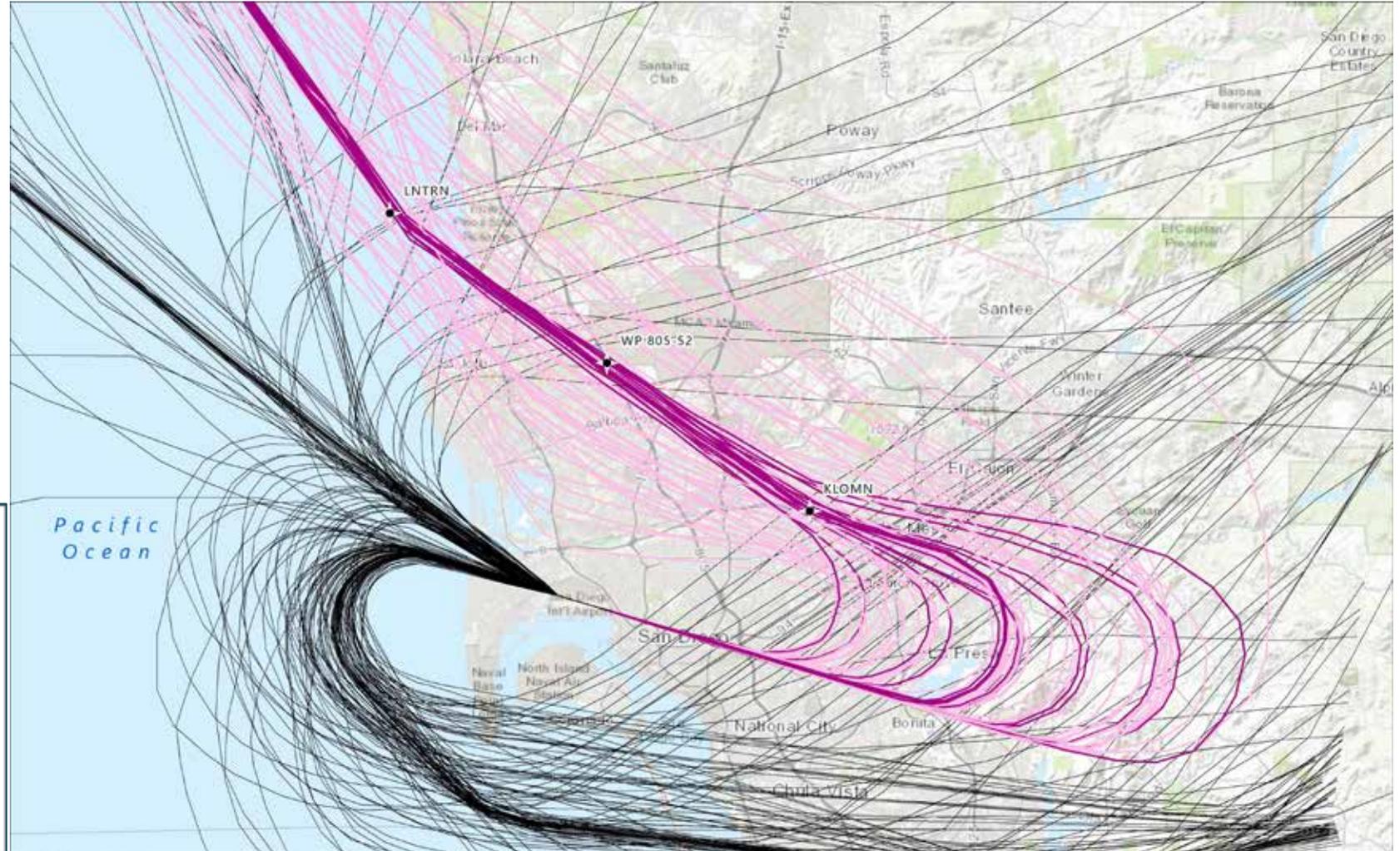
LEGEND

- SAN Runway 9-27
- BASELINE NOISE MODEL TRACKS**
- RNAV Northwest Arrival Tracks
- Conventional Northwest Arrival Tracks
- Arrival Tracks
- Daytime Departure Tracks

Recommendation 16 Alt 1 Version 3 – AEDT Baseline Noise Model Tracks and CNEL Ranges



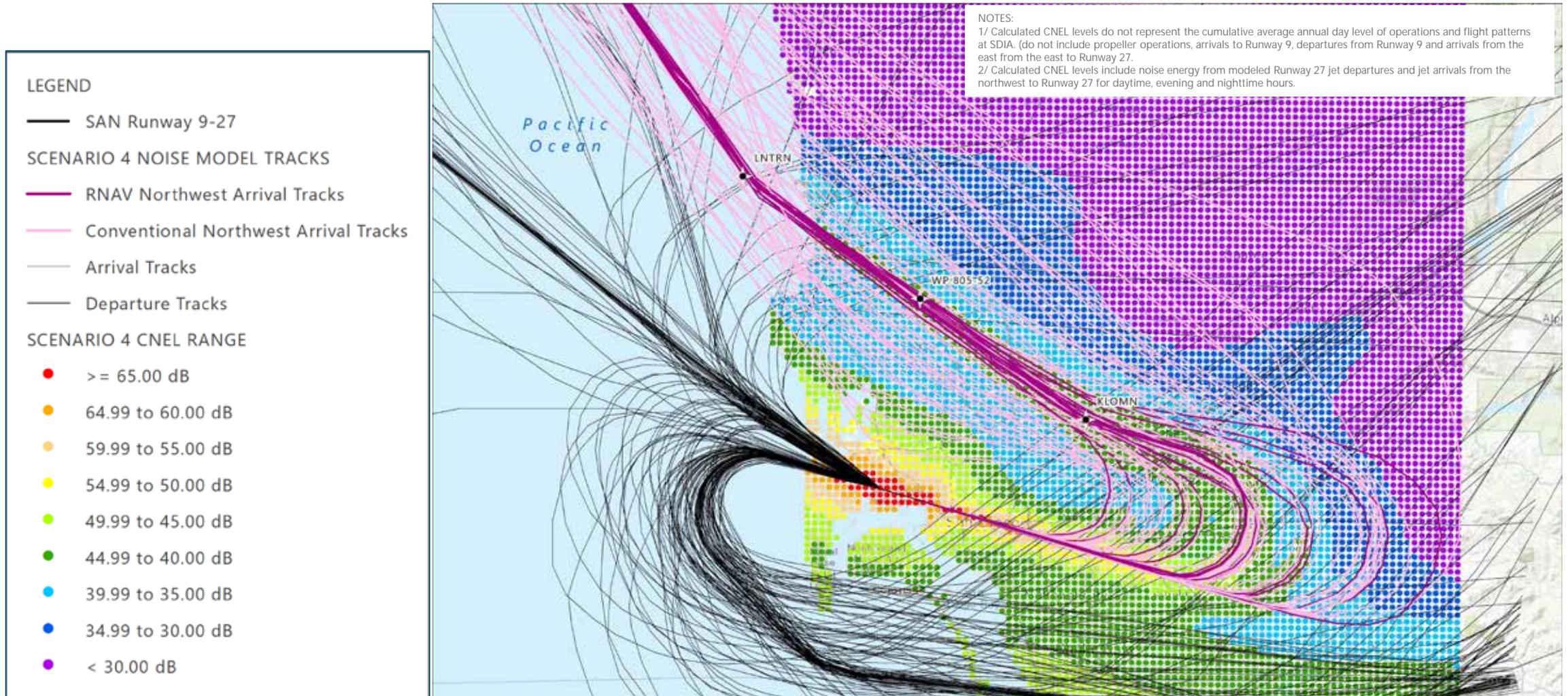
Recommendation 16 Alt 1 Version 3 – AEDT Scenario 4 Noise Model Tracks



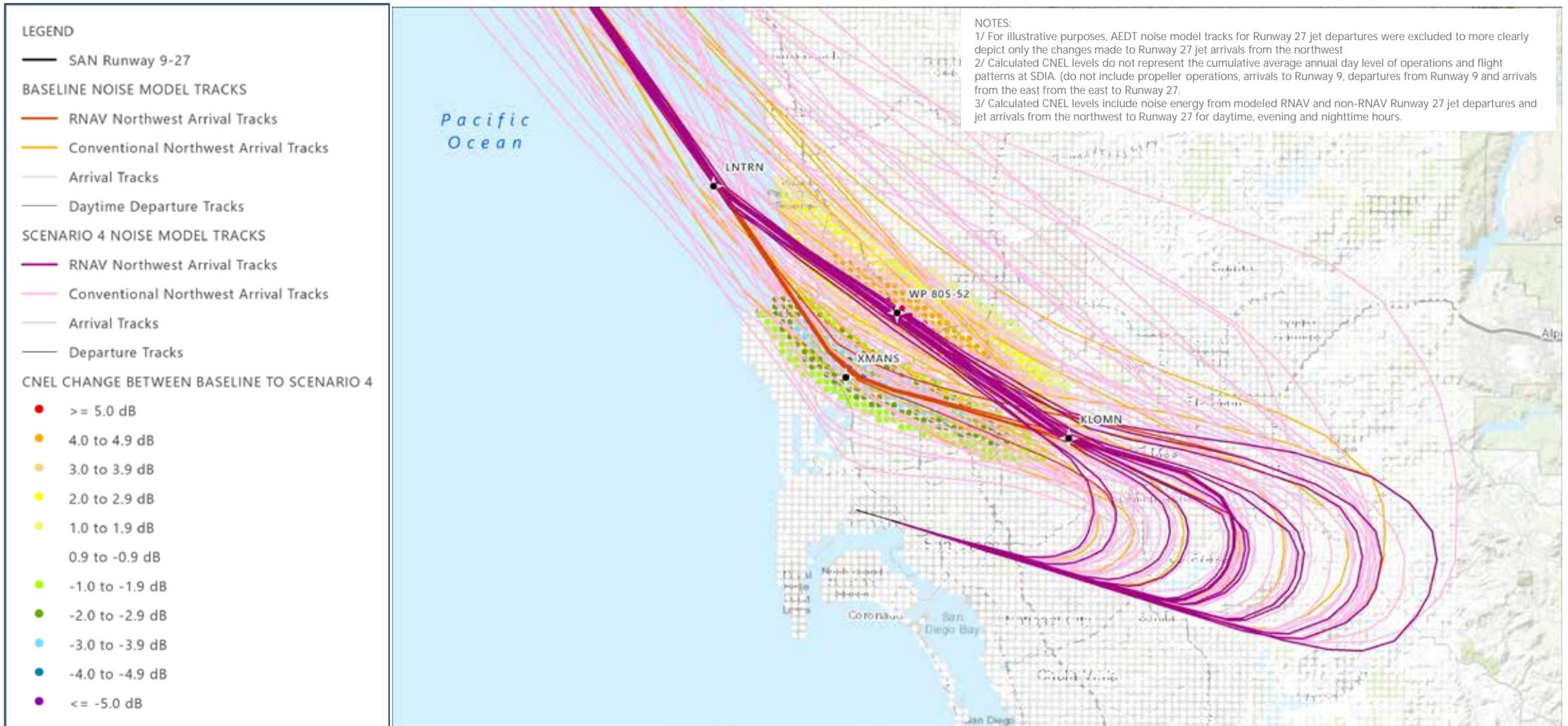
LEGEND

- SAN Runway 9-27
- SCENARIO 4 NOISE MODEL TRACKS**
- RNAV Northwest Arrival Tracks
- Conventional Northwest Arrival Tracks
- Arrival Tracks
- Departure Tracks

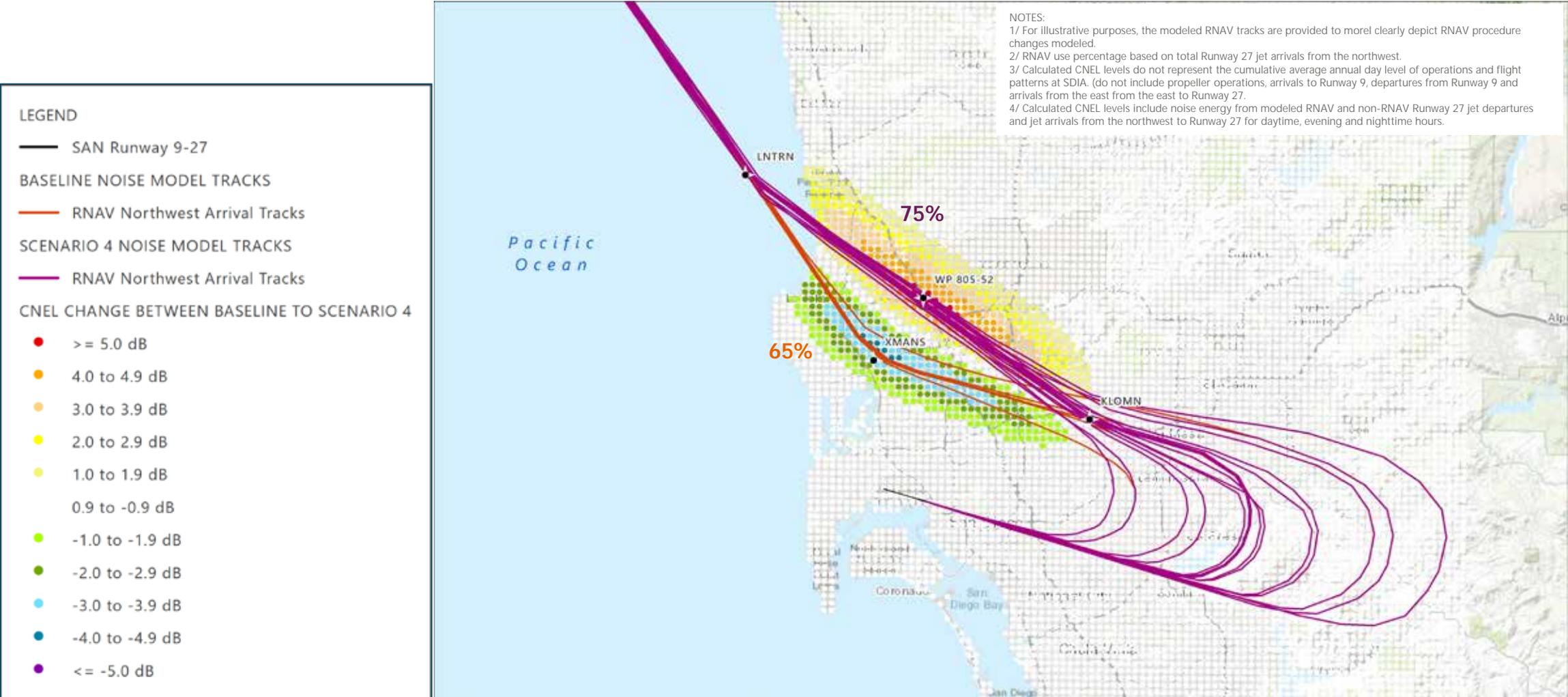
Recommendation 16 Alt 1 Version 3 – AEDT Scenario 4 Noise Model Tracks and CNEL Ranges



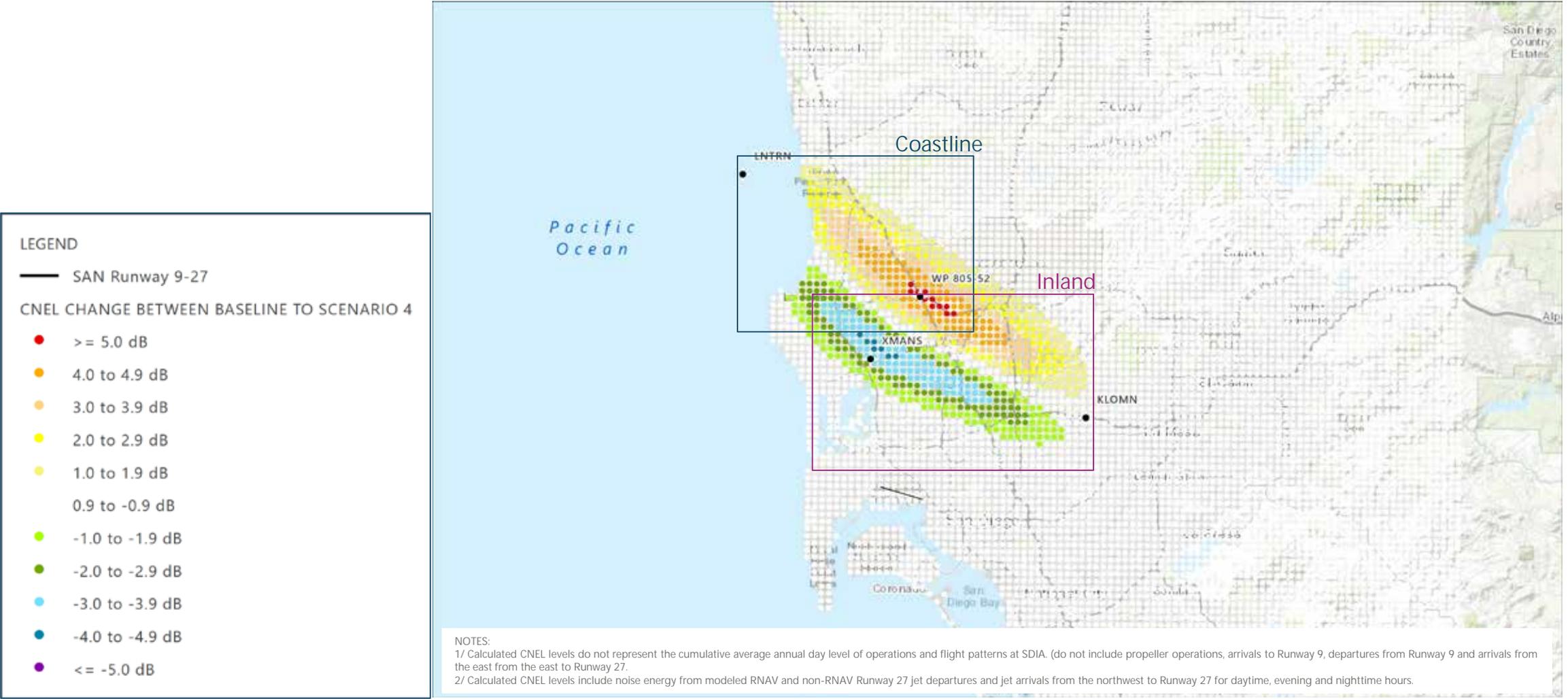
Recommendation 16 Alt 1 Version 3 – AEDT Scenario 4/Baseline Noise Model Tracks and CNEL Changes



Recommendation 16 Alt 1 Version 3 – AEDT Scenario 4/Baseline RNAV-Only Noise Model Tracks and CNEL Changes



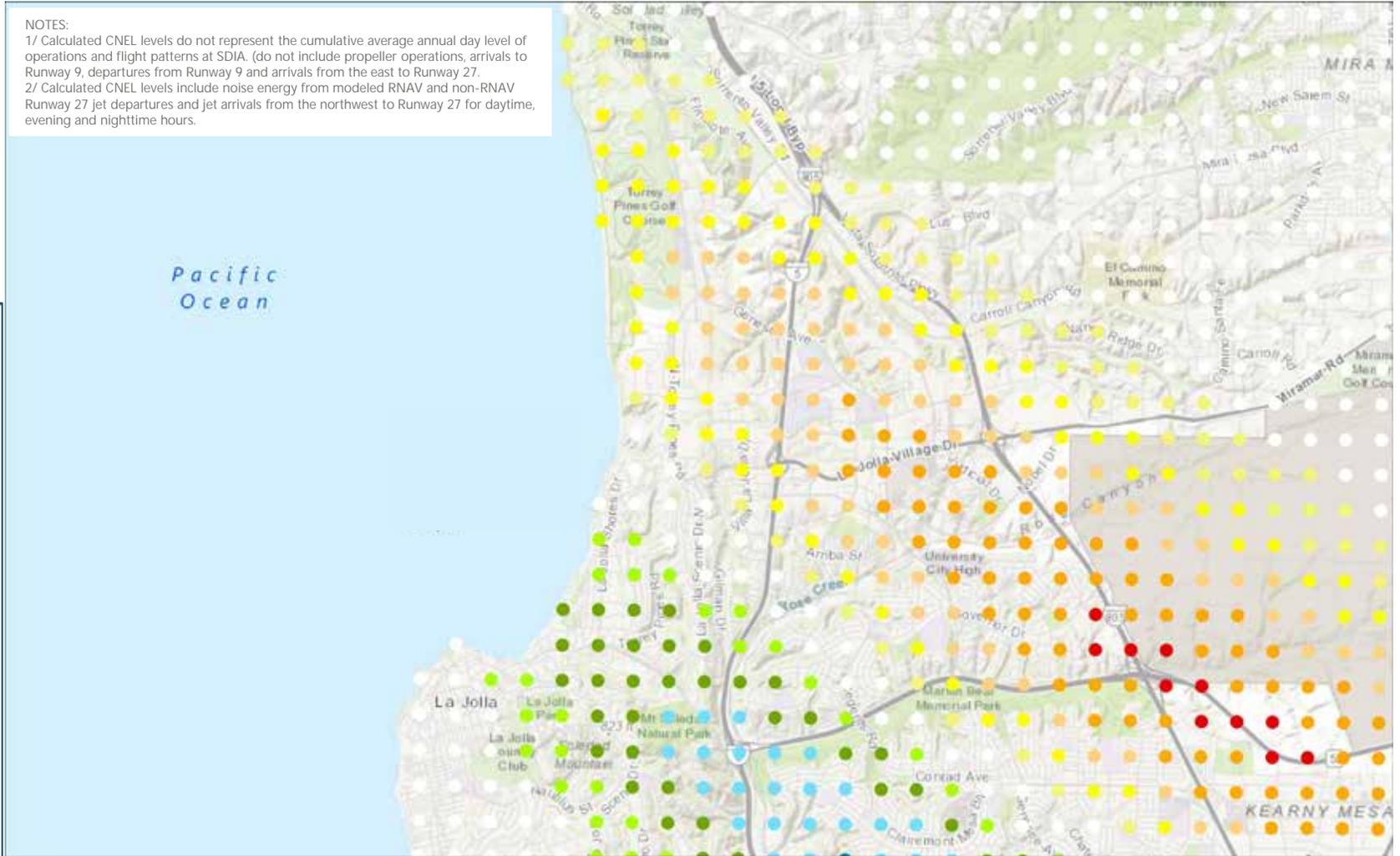
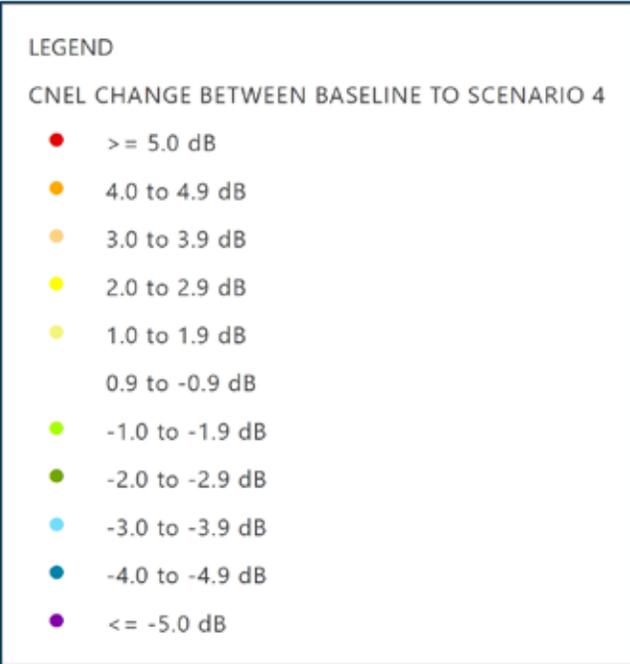
Recommendation 16 Alt 1 Version 3 – Changes in CNEL



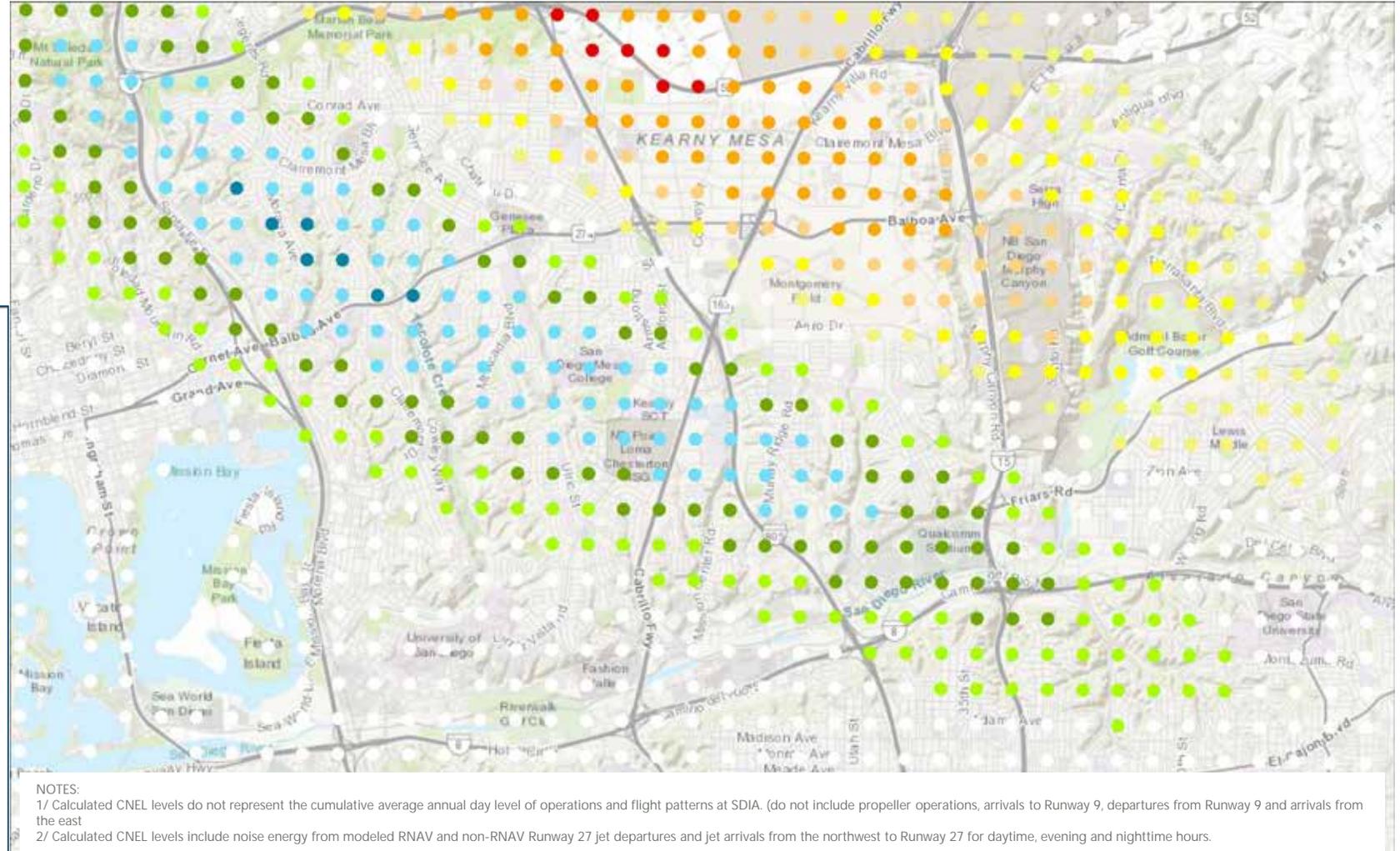
Recommendation 16 Alt 1 Version 3 – Changes in CNEL - Coastline

NOTES:

1/ Calculated CNEL levels do not represent the cumulative average annual day level of operations and flight patterns at SDIA. (do not include propeller operations, arrivals to Runway 9, departures from Runway 9 and arrivals from the east to Runway 27.
2/ Calculated CNEL levels include noise energy from modeled RNAV and non-RNAV Runway 27 jet departures and jet arrivals from the northwest to Runway 27 for daytime, evening and nighttime hours.



Recommendation 16 Alt 1 Version 3 – Changes in CNEL - Inland



Recommendations

- § **ANAC 14 Alternative 4** – Proceed forward for further consideration (note: would require lifting 1.5 nautical mile early turn restriction at night)
- § **ANAC 15 Alternative 4** – Proceed forward for further consideration (note: would require lifting 1.5 nautical mile early turn restriction at night)
- § **ANAC 15 Alternative 1** – Proceed forward for further consideration
- § **ANAC 16 Alternative 1 Version 3** - Do not proceed forward due to substantial increase in noise in areas such as University City and Kearny Mesa

Next Steps

- § Present to ANAC for consideration
- § ANAC to determine what to recommend to Authority Board
- § Staff report to Authority Board on ANAC recommendation(s)