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San Diego County Regional Airport Authority (SDCRAA)
Flight Procedure Evaluation
Technical Advisory Committee and Citizen Advisory Committee Meeting #3

San Diego International Airport

August 30, 2018

Agenda

§ Meeting Goals

§ Design Parameters

§ Acronyms

§ ANAC Recommendation 14 Design Concepts

§ ANAC Recommendation 15 Design Concepts

§ ANAC Recommendation 16 Design Concepts

§ East County SDIA Arrivals from Northwest

§ Next Steps

Meeting Goals

§ Review design concept recommendations

§ Review new draft concepts as result of preliminary draft concept discussions/input

§ Gather input from Technical Advisory Committee (TAC) and Citizen Advisory Committee (CAC) on consultant team recommendations and refinements to design concepts
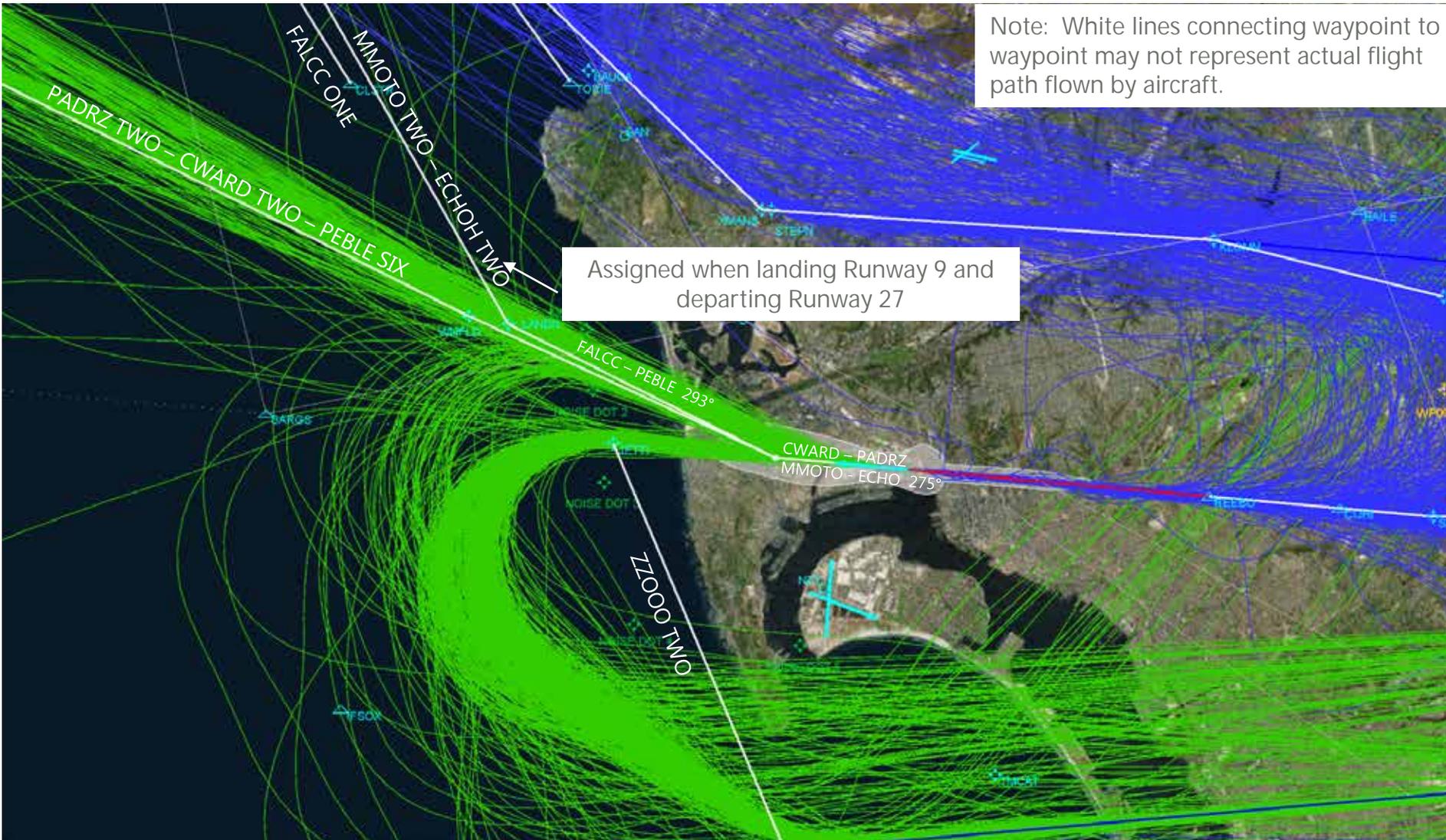
Design Parameters

- Be sensitive to aircraft flight path changes over areas exposed to CNEL 65 or higher
- Do not impact safety
- Meet FAA design criteria
- Fit within existing airspace and maintain existing airspace hand-off areas
- Do not impact capacity of SDIA
- Do not move noise to new non-compatible areas

Acronyms

- DF = Direct to a Fix

- Kts = Knots

- MDA = Minimum Descent Altitude

- MVA = Minimum Vectoring Altitude

- MSL = Mean Sea Level

- NM = Nautical Miles

- PBN = Performance Based Navigation

- RNAV = Area Navigation

- RNP = Required Navigational Performance

- SIAP = Standard Instrument Approach Procedure

- SID = Standard Instrument Departure Procedure

- STAR = Standard Instrument Arrival Route

- TARGETS = Terminal Area Route Generation Evaluation and Traffic Simulation

- VA = Heading to an Altitude

- WP = Waypoint

- Fly Over WP = Aircraft will fly over the point before turning

- Fly By WP = Aircraft will start turn just before reaching the point and will not fly over the point during the turn

ANAC Noise Recommendation 14 – Reduce Noise in Mission Beach, Pacific Beach, and La Jolla

ANAC Noise Recommendation 14 – Existing Flight Tracks

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Assigned when landing Runway 9 and departing Runway 27

ANAC Noise Recommendation 14 – Day Time Issues

Note: White and blue lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Moving PADRZ south then west is not feasible due to separation requirements

PADRZ TWO – CWARD TWO – PEBLE SIX

Earliest Point of Course Change

3 NM Separation Required Between Aircraft on ZZOOO 2

15° Course Divergence

Current VA to 520 feet MSL and DF along similar path to WNFLD

3 NM Separation Required Between Aircraft on BORDER 7

JETTI Waypoint

ZZOOO TWO

3 NM

BORDER 7 Ground Track

ZZOOO TWO Ground Track

- Moving LNDN and WNFLD waypoints south over Dot #2 would reduce the divergent angle below 15°; may be feasible if divergent heading is at 10°
- Earliest opportunity to turn west while maintaining at least 3 NM is north and east of WNFLD waypoint to ensure safe separation between ZZOOO 2 SID and BORDER 7 SID
- Moving WNFLD waypoint south not feasible during daytime and/or high demand hours assuming need for 15° divergence headings to manage traffic efficiently
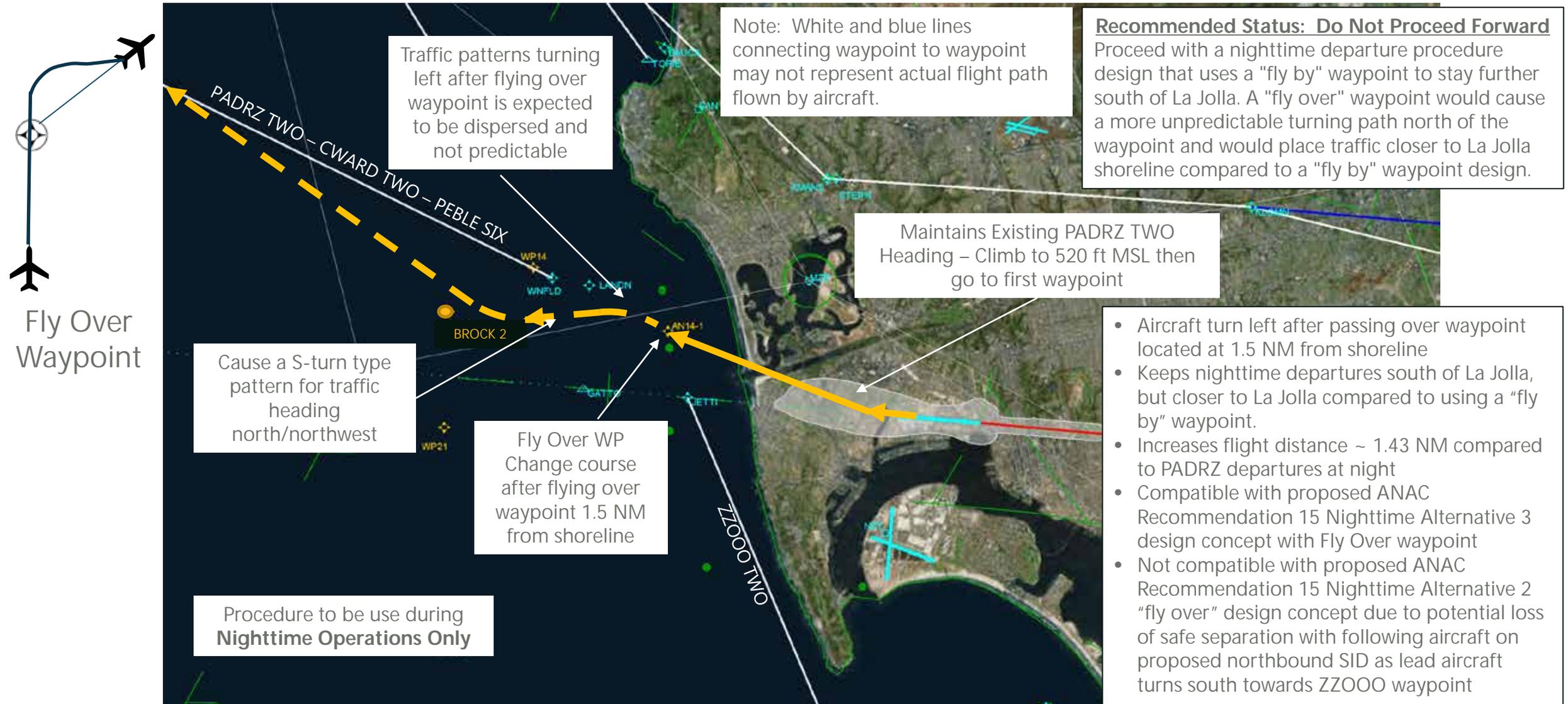
ANAC Noise Recommendation 14 - Alternatives

§ **Alternative 1 – Fly By Turn at 1.5 NM from shoreline – Nighttime**

§ Alternative 1 – Fly Over Turn at 1.5 NM from shoreline - Nighttime

§ Alternative 2 – Fly By Turn at shoreline – Nighttime

§ Alternative 3 – Fly By Turn at CNEL 65 contour - Nighttime

§ *Alternative 4 (new) – Fly By Turn between shoreline and 1.5 NM from shoreline - Nighttime*

§ *Alternative 5 (new) – ELSO 285° to Fly By waypoint at 1.5 NM thence to BROCK-2 - Nighttime*

§ *Alternative 6 (new) – ELSO 285°- Daytime*

Note: Items in **bold** are recommended to proceed forward for further assessment;
Items in ***bold italics*** require input from TAC/CAC

ANAC Noise Recommendation 14 – Alt 1 "Fly Over" Turn at 1.5 NM

Note: White and blue lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Traffic patterns turning left after flying over waypoint is expected to be dispersed and not predictable

Recommended Status: Do Not Proceed Forward
Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. A "fly over" waypoint would cause a more unpredictable turning path north of the waypoint and would place traffic closer to La Jolla shoreline compared to a "fly by" waypoint design.

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint

Fly Over Waypoint

Cause a S-turn type pattern for traffic heading north/northwest

Fly Over WP Change course after flying over waypoint 1.5 NM from shoreline

Procedure to be use during **Nighttime Operations Only**

PADRZ TWO – CWARD TWO – PEBLE SIX

WP14
WNFLD
BROCK 2
AN14-1
GATY7
GETTI
WP21
ZZOOO TWO

- Aircraft turn left after passing over waypoint located at 1.5 NM from shoreline
- Keeps nighttime departures south of La Jolla, but closer to La Jolla compared to using a "fly by" waypoint.
- Increases flight distance ~ 1.43 NM compared to PADRZ departures at night
- Compatible with proposed ANAC Recommendation 15 Nighttime Alternative 3 design concept with Fly Over waypoint
- Not compatible with proposed ANAC Recommendation 15 Nighttime Alternative 2 "fly over" design concept due to potential loss of safe separation with following aircraft on proposed northbound SID as lead aircraft turns south towards ZZOOO waypoint

ANAC Noise Recommendation 14 – Alt 1 "Fly By" Turn at 1.5 NM

Note: White and blue lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Recommended Status: Refine Design
Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. A "fly over" waypoint would cause a more unpredictable turning path north of the waypoint and would place traffic closer to La Jolla shoreline compared to a "fly by" waypoint design. Refine waypoint location to ensure aircraft do not turn until reaching 1.5 NM.
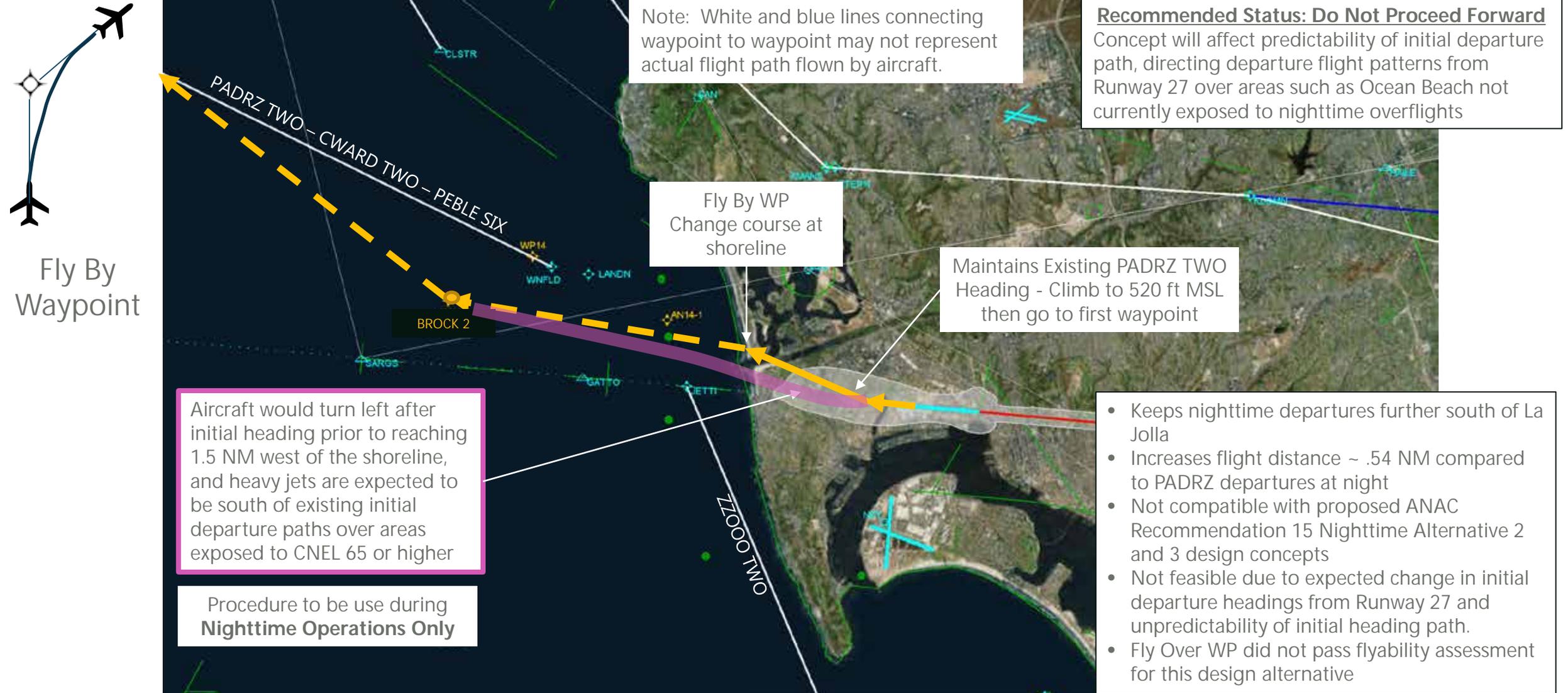
Fly By Waypoint

Maintains Existing PADRZ TWO Heading - Climb to 520 ft MSL then go to first waypoint

Fly By WP
Change course 1.5 NM from shoreline

Procedure to be use during **Nighttime Operations Only**

- Aircraft start turn prior to the waypoint located 1.5 NM from shoreline and flies just south of waypoint to join next course
- Keeps nighttime departures further south of La Jolla compared to Recommendation 14 Alternative 1 with "fly over" waypoint
- Increases flight distance ~ 1.43 NM compared to PADRZ departures at night
- Compatible with proposed ANAC Recommendation 15 Nighttime Alternative 2 design concept
- Not compatible with proposed ANAC Recommendation 15 Nighttime Alternative 3 design concept

ANAC Noise Recommendation 14 – Alt 1 "Fly By" Turn at 1.5 NM (Refined)

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Fly By Waypoint

PADRZ TWO – CWARD TWO – PEBLE SIX

Maintains Existing PADRZ TWO Heading - Climb to 520 ft MSL then go to first waypoint

Fly By WP Change course 1.5 NM from shoreline

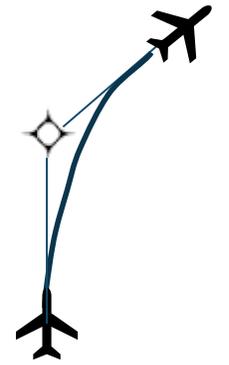Procedure to be use during **Nighttime Operations Only**

Recommended Status: Draft-Proceed Forward
Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. A "fly over" waypoint would cause a more unpredictable turning path north of the waypoint and would place traffic closer to La Jolla shoreline compared to a "fly by" waypoint design. Includes refined waypoint location to ensure aircraft do not turn until reaching 1.5 NM.

- Ensures turns after initial heading do not occur prior to 1.5 NM from shoreline
- Aircraft start turn at 1.5 NM from shoreline just prior to waypoint and flies just south of waypoint to join next course
- Keeps nighttime departures further south of La Jolla
- Increases flight distance ~ 1.5 NM as compared to PADRZ departures at night
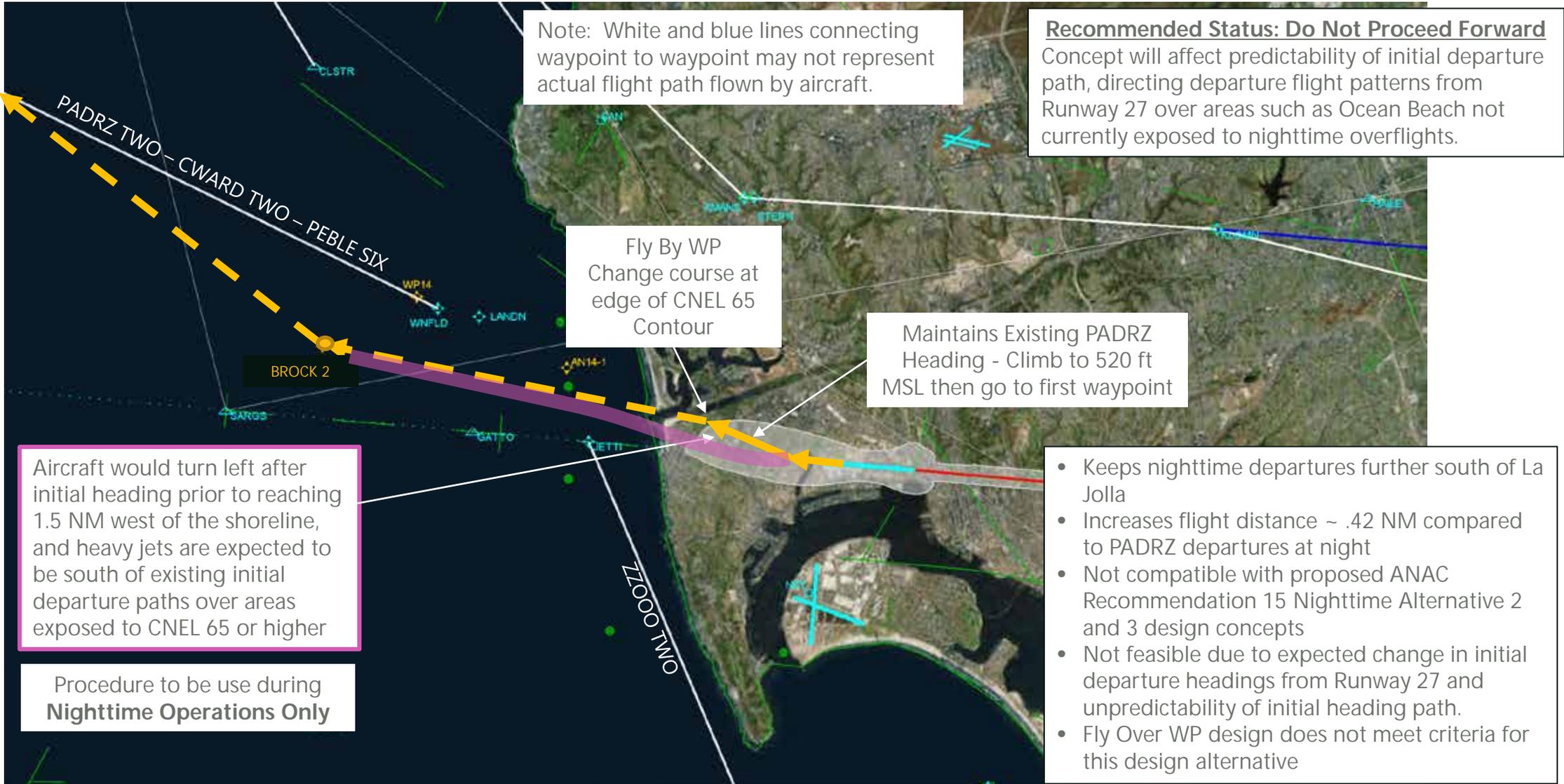- Compatible with proposed ANAC Recommendation 15 Nighttime Alternative 2 refined design concept

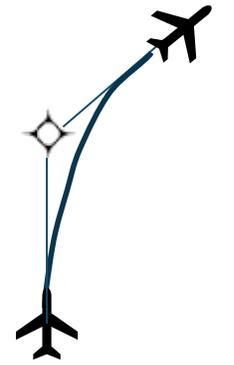# ANAC Noise Recommendation 14 – Alt 2 Turn at Shoreline

Note: White and blue lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Recommended Status: Do Not Proceed Forward
Concept will affect predictability of initial departure path, directing departure flight patterns from Runway 27 over areas such as Ocean Beach not currently exposed to nighttime overflights

PADRZ TWO – CWARD TWO – PEBLE SIX

Fly By Waypoint

Fly By WP
Change course at shoreline

Maintains Existing PADRZ TWO Heading - Climb to 520 ft MSL then go to first waypoint

BROCK 2

Aircraft would turn left after initial heading prior to reaching 1.5 NM west of the shoreline, and heavy jets are expected to be south of existing initial departure paths over areas exposed to CNEL 65 or higher

Procedure to be use during **Nighttime Operations Only**

- Keeps nighttime departures further south of La Jolla
- Increases flight distance ~ .54 NM compared to PADRZ departures at night
- Not compatible with proposed ANAC Recommendation 15 Nighttime Alternative 2 and 3 design concepts
- Not feasible due to expected change in initial departure headings from Runway 27 and unpredictability of initial heading path.
- Fly Over WP did not pass flyability assessment for this design alternative

ANAC Noise Recommendation 14 – Alt 3 Turn at CNEL 65 Contour

Note: White and blue lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Recommended Status: Do Not Proceed Forward
Concept will affect predictability of initial departure path, directing departure flight patterns from Runway 27 over areas such as Ocean Beach not currently exposed to nighttime overflights.

Fly By Waypoint

PADRZ TWO – CWARD TWO – PEBLE SIX

Fly By WP Change course at edge of CNEL 65 Contour

Maintains Existing PADRZ Heading - Climb to 520 ft MSL then go to first waypoint

BROCK 2

Aircraft would turn left after initial heading prior to reaching 1.5 NM west of the shoreline, and heavy jets are expected to be south of existing initial departure paths over areas exposed to CNEL 65 or higher

ZZOOO TWO

Procedure to be use during **Nighttime Operations Only**

- Keeps nighttime departures further south of La Jolla
- Increases flight distance ~ .42 NM compared to PADRZ departures at night
- Not compatible with proposed ANAC Recommendation 15 Nighttime Alternative 2 and 3 design concepts
- Not feasible due to expected change in initial departure headings from Runway 27 and unpredictability of initial heading path.
- Fly Over WP design does not meet criteria for this design alternative

DRAFT Deliberative Document – For Discussion Purposes Only

ANAC Noise Recommendation 14 –Alt 4 Turn Between Shoreline and 1.5 NM

ANAC Noise Recommendation 14 –Alt 5 ELSO to Fly By Turn at 1.5 NM

Fly By Waypoint

PADRZ TWO – CWARD TWO – PEBLE SIX

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Recommended Status: Draft – For TAC/CAC Discussion

Modify initial departure heading to direct aircraft on runway heading and then intercept a 285 degree course to the first waypoint located just past 1.5 NM from shoreline

Fly runway heading then turn right to intercept 285 degree course to first waypoint (Vector-to-Intercept a Course to a Fix – VI/CF)

Fly By WP Change course at 1.5 NM from shoreline

Procedure to be use during **Nighttime Operations Only**

FAA Order 7110.65X – Divergent Heading for Successive Departures:
- Allows for 10-degree heading from runway end to diverge from aircraft on another heading
- Once lead aircraft is 1 mile away, FAA ATC can release following aircraft as long as heading is 10 degrees or more from lead aircraft
- 10-degree heading only applies from end of departure runway and both departures are on an RNAV procedure, not radar vectored

- Ensures turns after initial heading do not occur prior to 1.5 NM from shoreline
- Moves noise further south closer to Ocean Beach community and has high potential to effect CNEL 65 or higher area
- Keeps nighttime departures further south of La Jolla
- Increases flight distance ~ .5 NM compared to PADRZ departures at night
- Compatible with proposed ANAC Recommendation 15 Nighttime Alternative 5 design concept

ANAC Noise Recommendation 14 – Alt 6 ELSO Day

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

PADRZ TWO – CWARD TWO – PEBLE SIX

Fly By Waypoint

Fly By WP
Change course to the northwest towards KERNL waypoint

Recommended Status: Draft-For TAC/CAC Discussion
Modify initial departure heading to direct aircraft on runway heading and then intercept a 285 degree course to the first waypoint (WP 76) that is further south than WNFLD waypoint – daytime hours

Fly runway heading then turn right to intercept 285 degree course to WP 76 (Vector-to-Intercept a Course to a Fix – VI/CF)

Procedure to be use during **Daytime Operations**

FAA Order 7110.65X – Divergent Heading for Successive Departures:
- Allows for 10-degree heading from runway end to diverge from aircraft on another heading
- Once lead aircraft is 1 mile away, FAA ATC can release following aircraft as long as heading is 10 degrees or more from lead aircraft
- 10-degree heading only applies from end of departure runway and both departures are on an RNAV procedure, not radar vectored

- Keeps daytime departures further south of La Jolla
- Moves noise further south closer to Ocean Beach community and has high potential to effect CNEL 65 or higher area
- Increases flight distance ~ .4 NM compared to PADRZ departures at night
- Compatible with ZZOOO SID and Recommendation 15 Alternative 1

ANAC Noise Recommendation 14 – Initial Heading Input
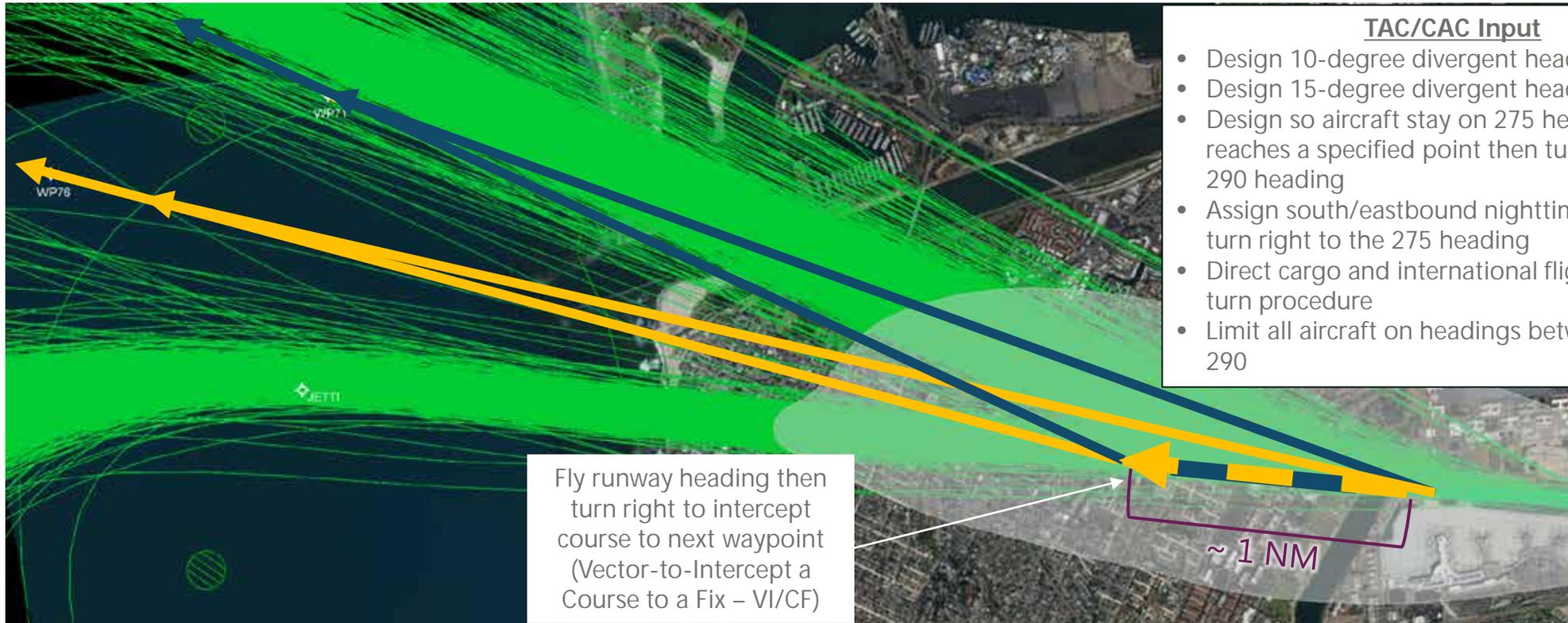
TAC/CAC Input
- Design 10-degree divergent heading (285)
- Design 15-degree divergent heading (290)
- Design so aircraft stay on 275 heading until it reaches a specified point then turn right on 290 heading
- Assign south/eastbound nighttime aircraft that turn right to the 275 heading
- Direct cargo and international flights to right turn procedure
- Limit all aircraft on headings between 275 and 290

Fly runway heading then turn right to intercept course to next waypoint (Vector-to-Intercept a Course to a Fix – VI/CF)

~ 1 NM

→ Fly runway heading and turn right to join 285-degree magnetic course to first waypoint (Vector-to-Intercept a Course to a Fix-VI/CF)

→ Fly runway heading and turn right to join 290-degree magnetic course to first waypoint (Vector-to-Intercept a Course to a Fix-VI/CF)

— Radar Flight Tracks:
North/Northwest Traffic on PADRZ SID – Fly runway heading until 520 feet MSL then turn right and go to WNFLD waypoint (Vector-to-Altitude then Direct to Fix – VA/DF) – heading to WNFLD depends on when aircraft reaches 520 feet MSL
South/East Traffic on ZZOOO SID - Stay on 275 to JETTI waypoint
South/East Traffic at Night – Issued 290 heading by SAN Air Traffic Control Tower and continue until 1.5 NM from shoreline

ANAC Noise Recommendation 15 – Reduce Noise Over the Point Loma Peninsula and La Jolla

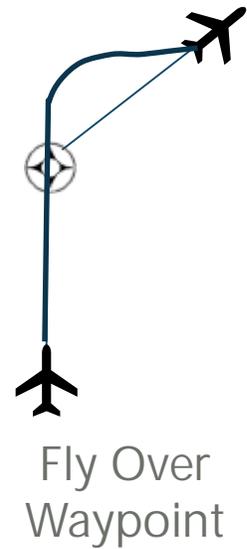# ANAC Noise Recommendation 15 – Existing Flight Tracks
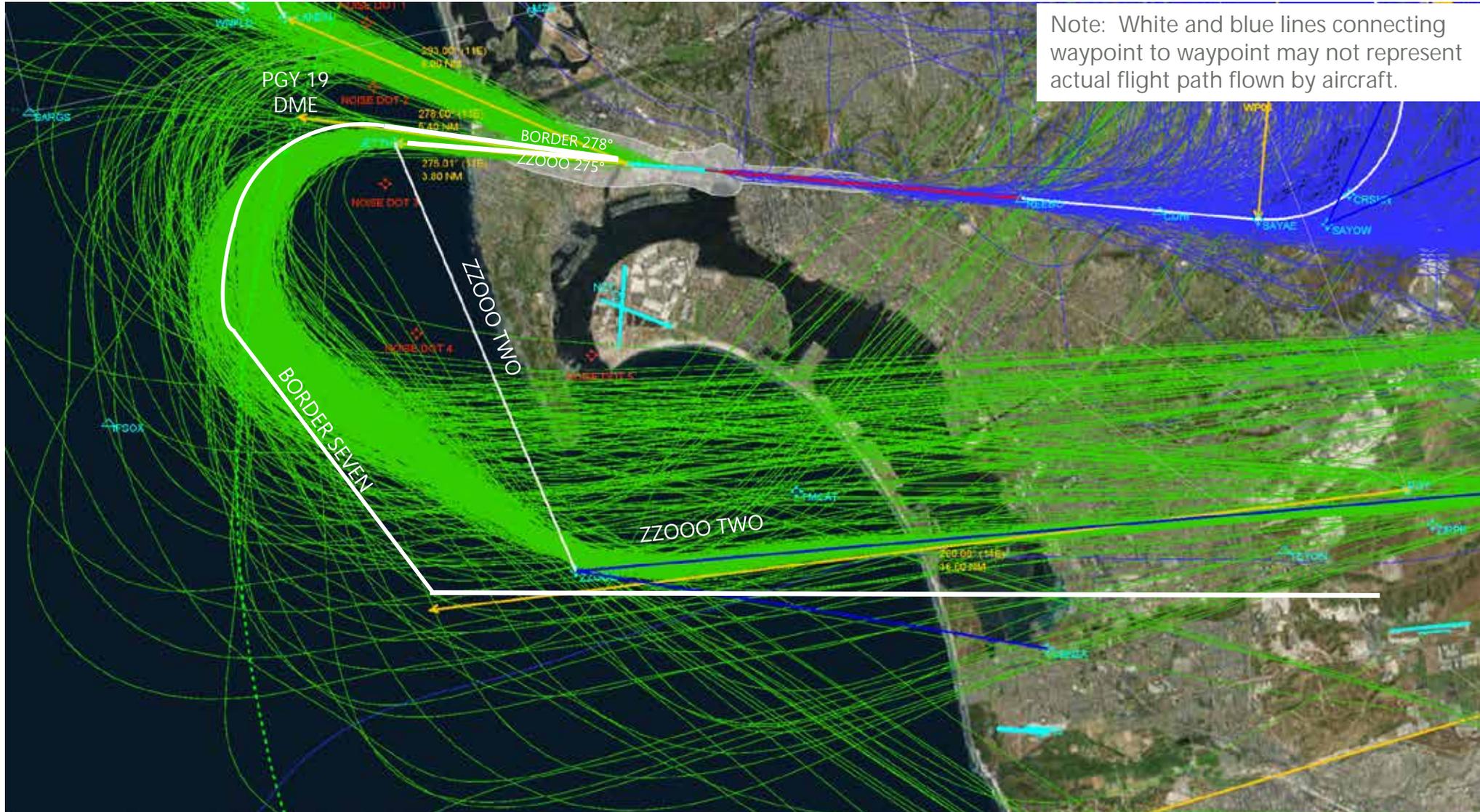
Note: White and blue lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

ANAC Noise Recommendation 15 - Alternatives

§ **Alternative 1 – Extend JETTI Waypoint 2 NM West**

§ **Alternative 2 –Fly By Turn at 1.5 NM then to ZZOOO Waypoint - Nighttime**

§ Alternative 3 –Fly Over Turn at 1.5 NM then to ZZOOO Waypoint - Nighttime

§ *Alternative 4 (New) –Fly By Turn between shoreline and 1.5 NM from shoreline then to ZZOOO waypoint - Nighttime*

§ *Alternative 5 (New) – ELSO 285° to Fly By waypoint at 1.5 NM then to ZZOOO - Nighttime*

Note: Items in **bold** are recommended to proceed forward for further assessment;
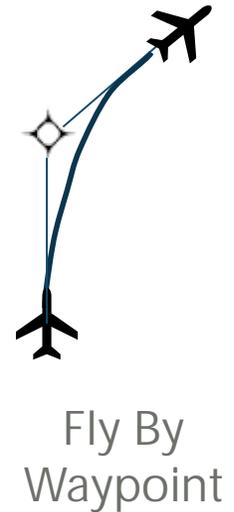Items in ***bold italics*** require input from TAC/CAC

ANAC Noise Recommendation 15 – Alt 1 Extend JETTI Waypoint 2 NM West

Fly Over Waypoint

Fly Over WP
JETTI Extended 2 NM
Speed restricted to
230 knots up to JETTI

Direct to Fix (DF) Leg

8,000 feet MSL at ZZOOO

Recommended Status: Draft-Proceed Forward
Meets intent of Recommendation 16 and meets design criteria. 230 knot speed restriction to JETTI waypoint is maintained. Discuss concerns related to potential increase in FAA ATC vectoring off procedure due to increased distance and option to extend JETTI 1 mile west instead of 2 miles west.

- Meets required minimum distance between JETTI and ZZOOO waypoints – no waiver required
- Increase flight distance should increase frequency of aircraft over 8,000 feet MSL near ZZOOO waypoint (from 85% to over 95%)
- Moves dispersion of traffic further west from Point Loma
- Would increase flight distance by 2.95 NM compared to existing ZZOOO SID
- Maintains all existing routes after ZZOOO waypoint
- Radar vector may occur during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)
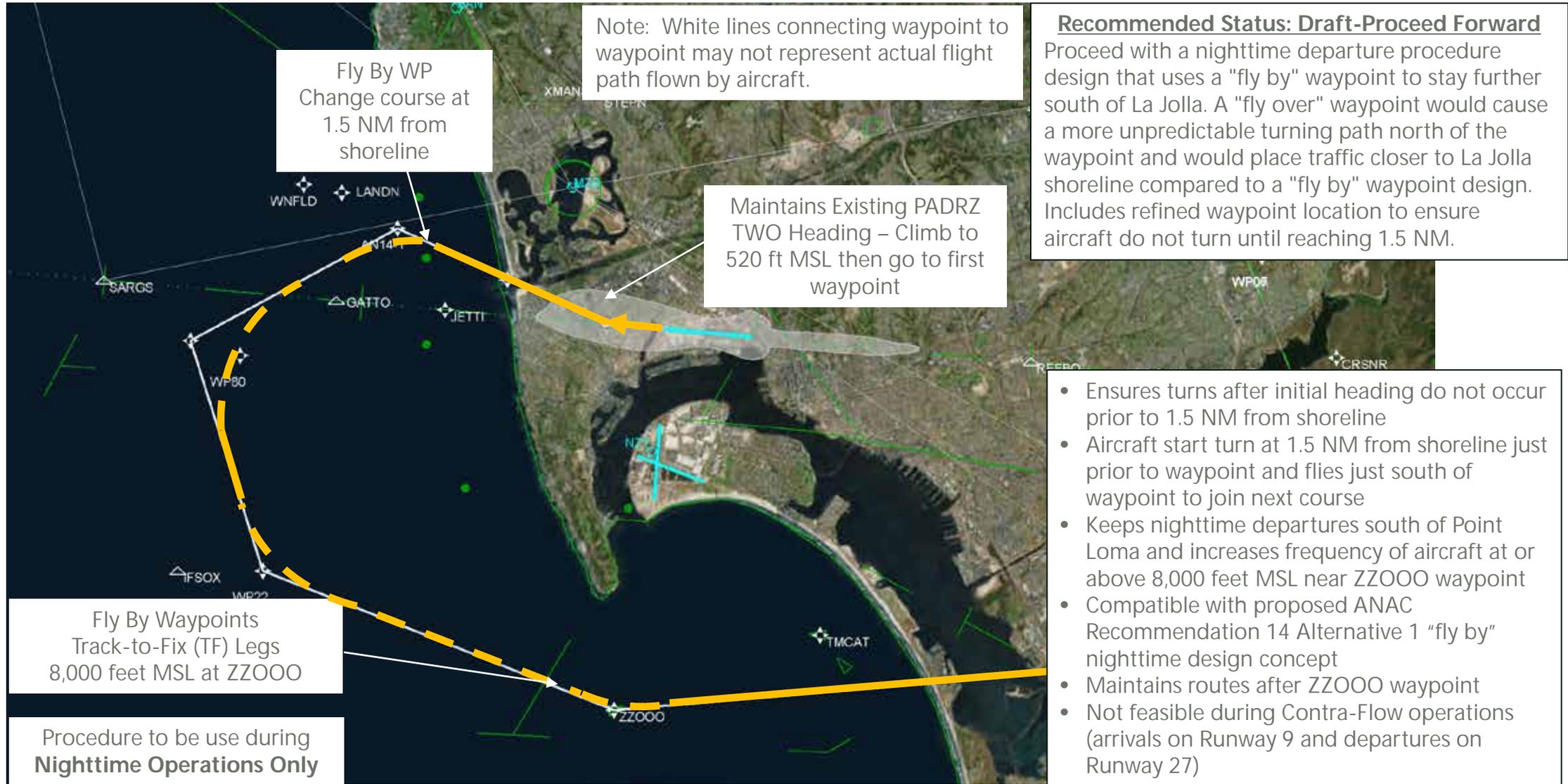
ANAC Noise Recommendation 15 – Alt 2 "Fly By" Turn at 1.5 NM

Fly By Waypoint

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Fly By WP
Change course at 1.5 NM from shoreline

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint
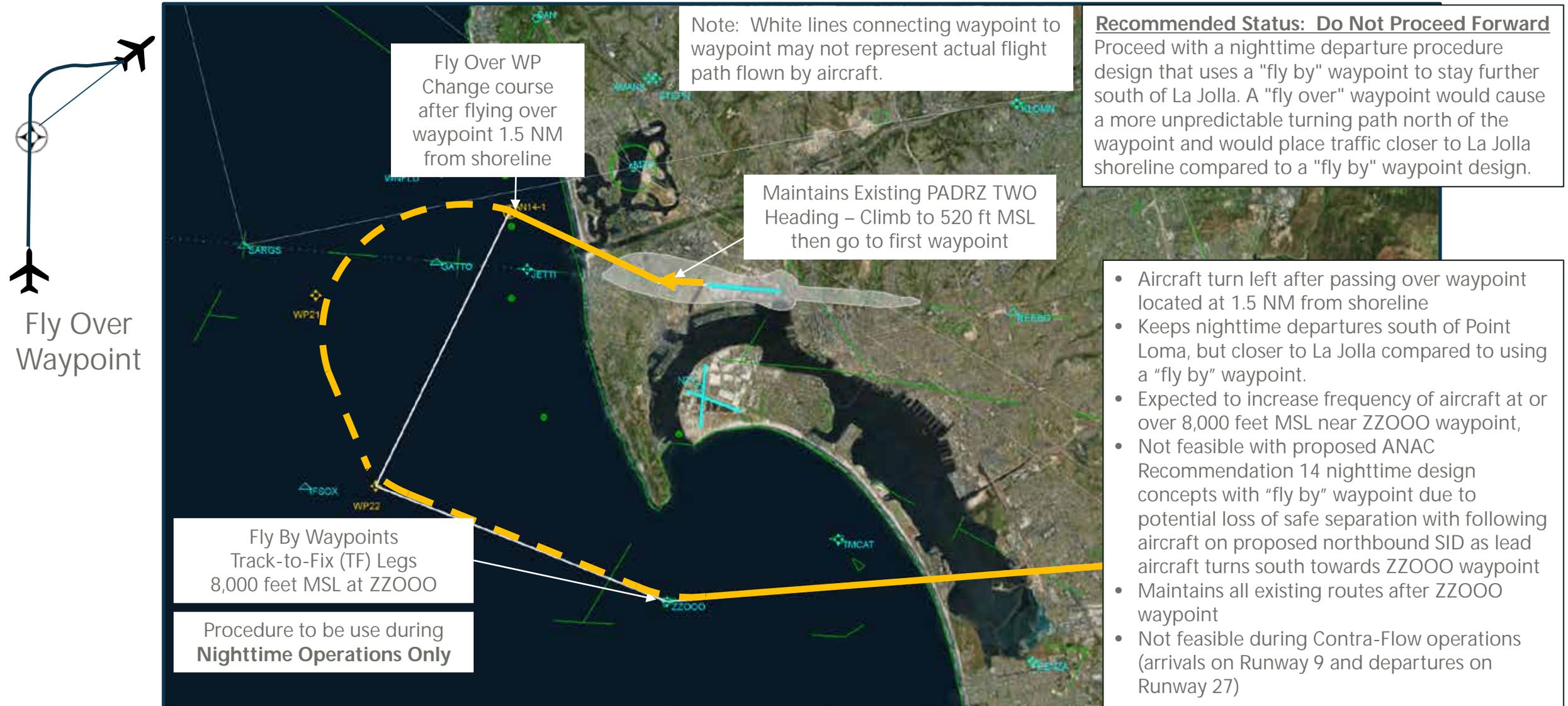
Recommended Status: Refine Design
Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. A "fly over" waypoint would cause a more unpredictable turning path north of the waypoint and would place traffic closer to La Jolla shoreline compared to a "fly by" waypoint design. Refine waypoint location to ensure aircraft do not turn until reaching 1.5 NM.

Fly By Waypoints
Track-to-Fix (TF) Legs
8,000 feet MSL at ZZOOO

Procedure to be use during
Nighttime Operations Only

- Aircraft start turn prior to the waypoint located 1.5 NM from shoreline and flies just south of waypoint to join next course
- Keeps nighttime departures south of Point Loma and increases frequency of aircraft at or above 8,000 feet MSL near ZZOOO waypoint
- Compatible with proposed ANAC Recommendation 14 Alternative 1 "fly by" nighttime design concept
- Maintains routes after ZZOOO waypoint
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)

ANAC Noise Recommendation 15 – Alt 2 "Fly By" Turn at 1.5 NM (Refined)

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Fly By WP
Change course at 1.5 NM from shoreline

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint

Fly By Waypoint

Fly By Waypoints
Track-to-Fix (TF) Legs
8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

Recommended Status: Draft-Proceed Forward

Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. A "fly over" waypoint would cause a more unpredictable turning path north of the waypoint and would place traffic closer to La Jolla shoreline compared to a "fly by" waypoint design. Includes refined waypoint location to ensure aircraft do not turn until reaching 1.5 NM.

- Ensures turns after initial heading do not occur prior to 1.5 NM from shoreline
- Aircraft start turn at 1.5 NM from shoreline just prior to waypoint and flies just south of waypoint to join next course
- Keeps nighttime departures south of Point Loma and increases frequency of aircraft at or above 8,000 feet MSL near ZZOOO waypoint
- Compatible with proposed ANAC Recommendation 14 Alternative 1 "fly by" nighttime design concept
- Maintains routes after ZZOOO waypoint
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)
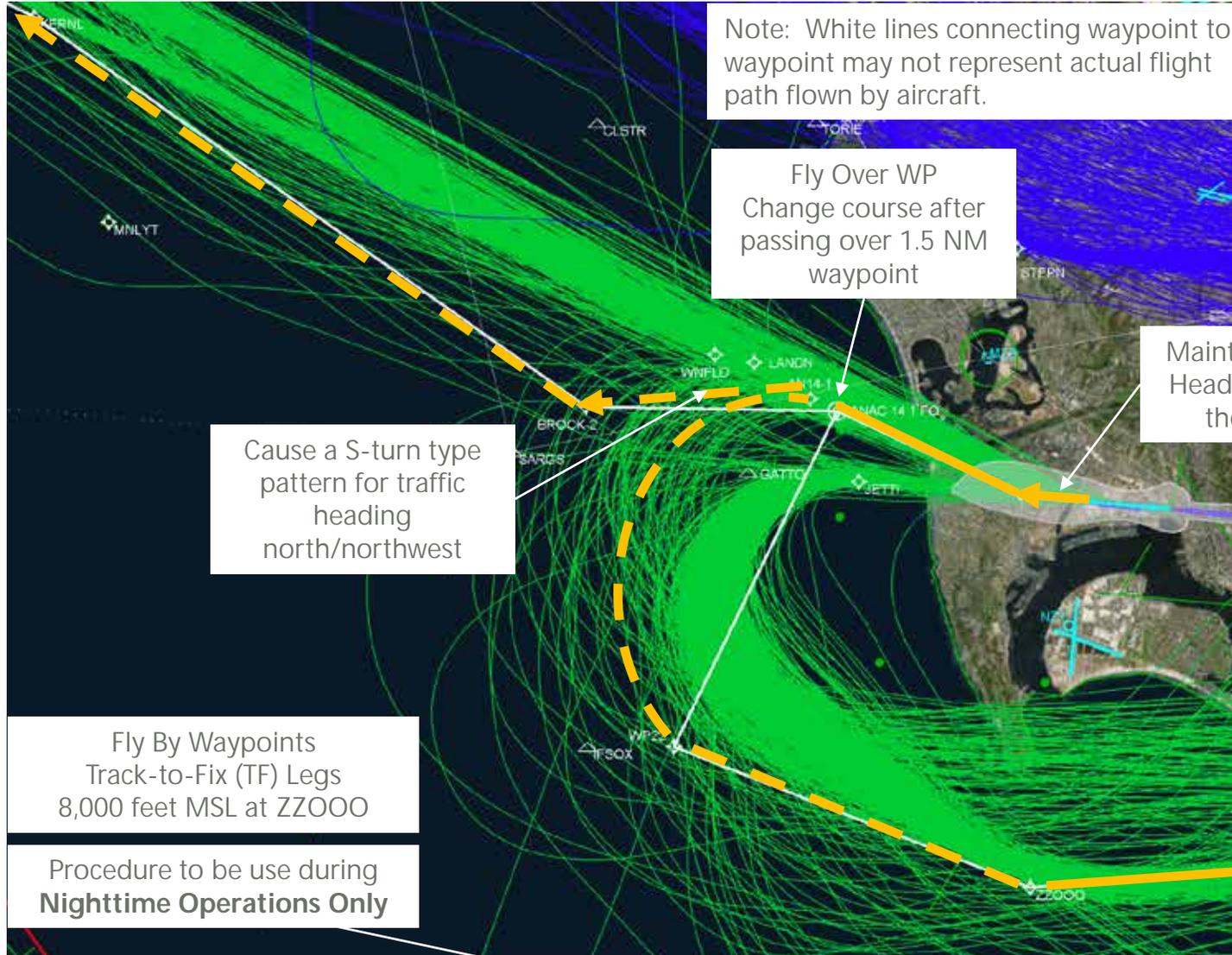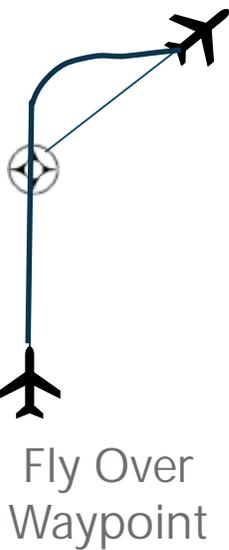
Composite of Recommendation 14 Alt 1 "Fly By" and Recommendation 15 Alt 2

Fly By Waypoint

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Fly By WP
Change course at 1.5 NM from shoreline

Recommended Status: Draft-Proceed Forward
Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. This design meets the intent for both recommendations, does not introduce potential safety risks, and provides a more predictable path and common route for north and eastbound departures.

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint

Fly By Waypoints
Track-to-Fix (TF) Legs
8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

- South/East bound aircraft would turn left towards the south 1.5 NM west of the shoreline
- North/Northwest bound aircraft would turn left towards the west at 1.5 NM west of the shoreline
- Maintains all existing routes after ZZOOO and KERNL waypoints
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)

ANAC Noise Recommendation 15 – Alt 3 "Fly Over" Turn at 1.5 NM

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Fly Over WP Change course after flying over waypoint 1.5 NM from shoreline

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint

Recommended Status: Do Not Proceed Forward
Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. A "fly over" waypoint would cause a more unpredictable turning path north of the waypoint and would place traffic closer to La Jolla shoreline compared to a "fly by" waypoint design.

Fly Over Waypoint

- Aircraft turn left after passing over waypoint located at 1.5 NM from shoreline
- Keeps nighttime departures south of Point Loma, but closer to La Jolla compared to using a "fly by" waypoint.
- Expected to increase frequency of aircraft at or over 8,000 feet MSL near ZZOOO waypoint,
- Not feasible with proposed ANAC Recommendation 14 nighttime design concepts with "fly by" waypoint due to potential loss of safe separation with following aircraft on proposed northbound SID as lead aircraft turns south towards ZZOOO waypoint
- Maintains all existing routes after ZZOOO waypoint
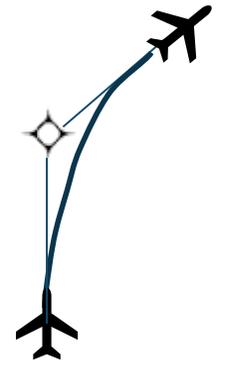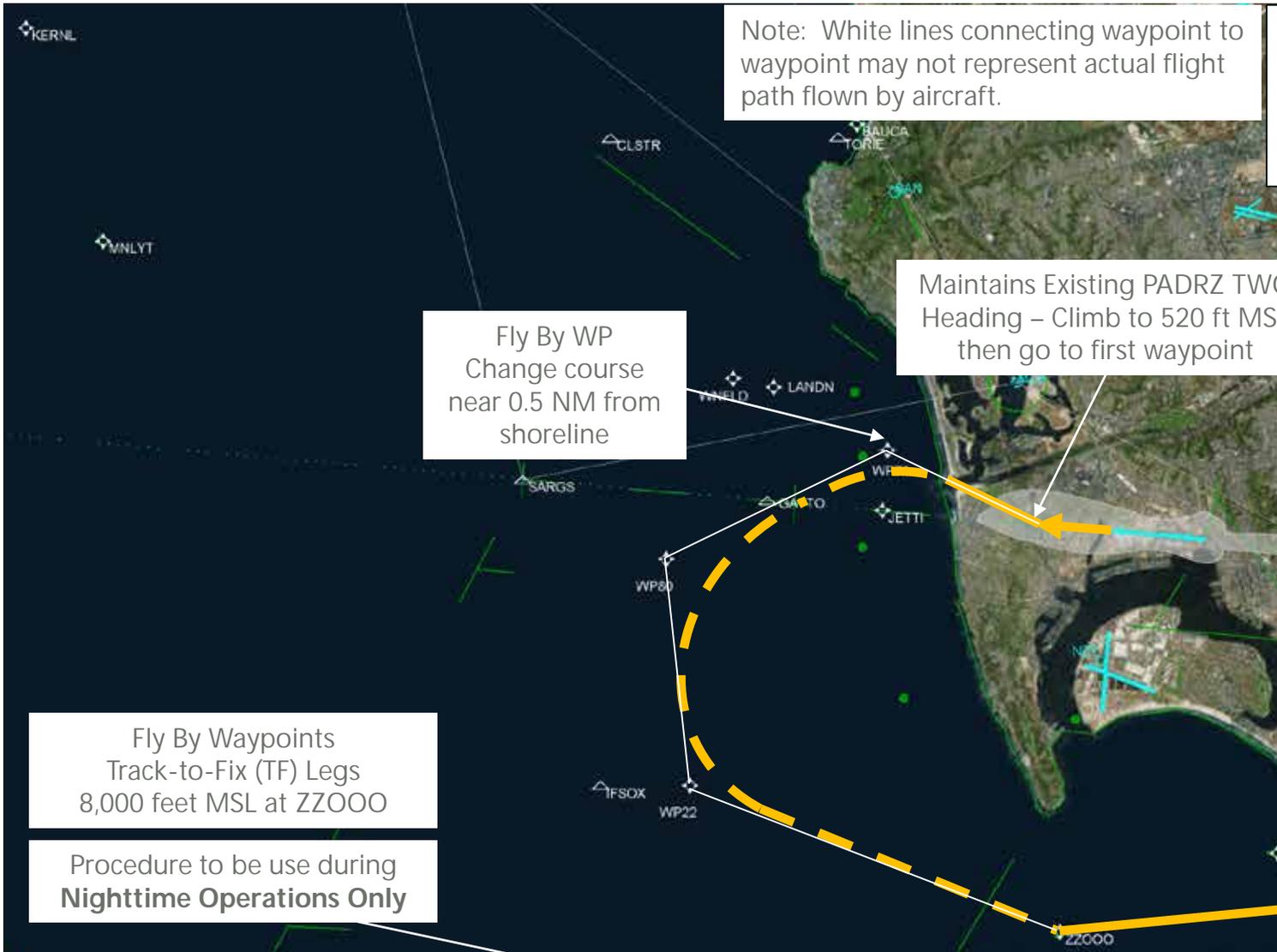- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)

Fly By Waypoints Track-to-Fix (TF) Legs 8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

Composite of Recommendation 14 Alt 1 "Fly Over" and Recommendation 15 Alt 3

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Recommended Status: Do Not Proceed Forward
Proceed with a nighttime departure procedure design that uses a "fly by" waypoint to stay further south of La Jolla. A "fly over" waypoint would cause a more unpredictable turning path north of the waypoint and would place traffic closer to La Jolla shoreline compared to a "fly by" waypoint design.

Fly Over WP
Change course after passing over 1.5 NM waypoint

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint

Fly Over Waypoint

Cause a S-turn type pattern for traffic heading north/northwest

Fly By Waypoints
Track-to-Fix (TF) Legs
8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

- Aircraft turn left after passing over waypoint located at 1.5 NM from shoreline
- Keeps nighttime departures south of Point Loma, but closer to La Jolla compared to using a "fly by" waypoint
- Expected to increase frequency of aircraft at or over 8,000 feet MSL near ZZOOO waypoint,.
- Maintains all existing routes after KERNL and ZZOOO waypoints
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)

ANAC Noise Recommendation 15 – Alt 4 Turn Between Shoreline and 1.5 NM

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.
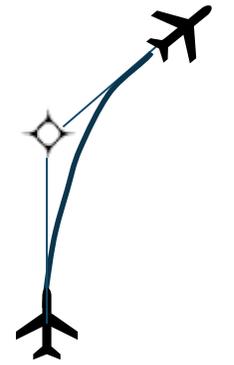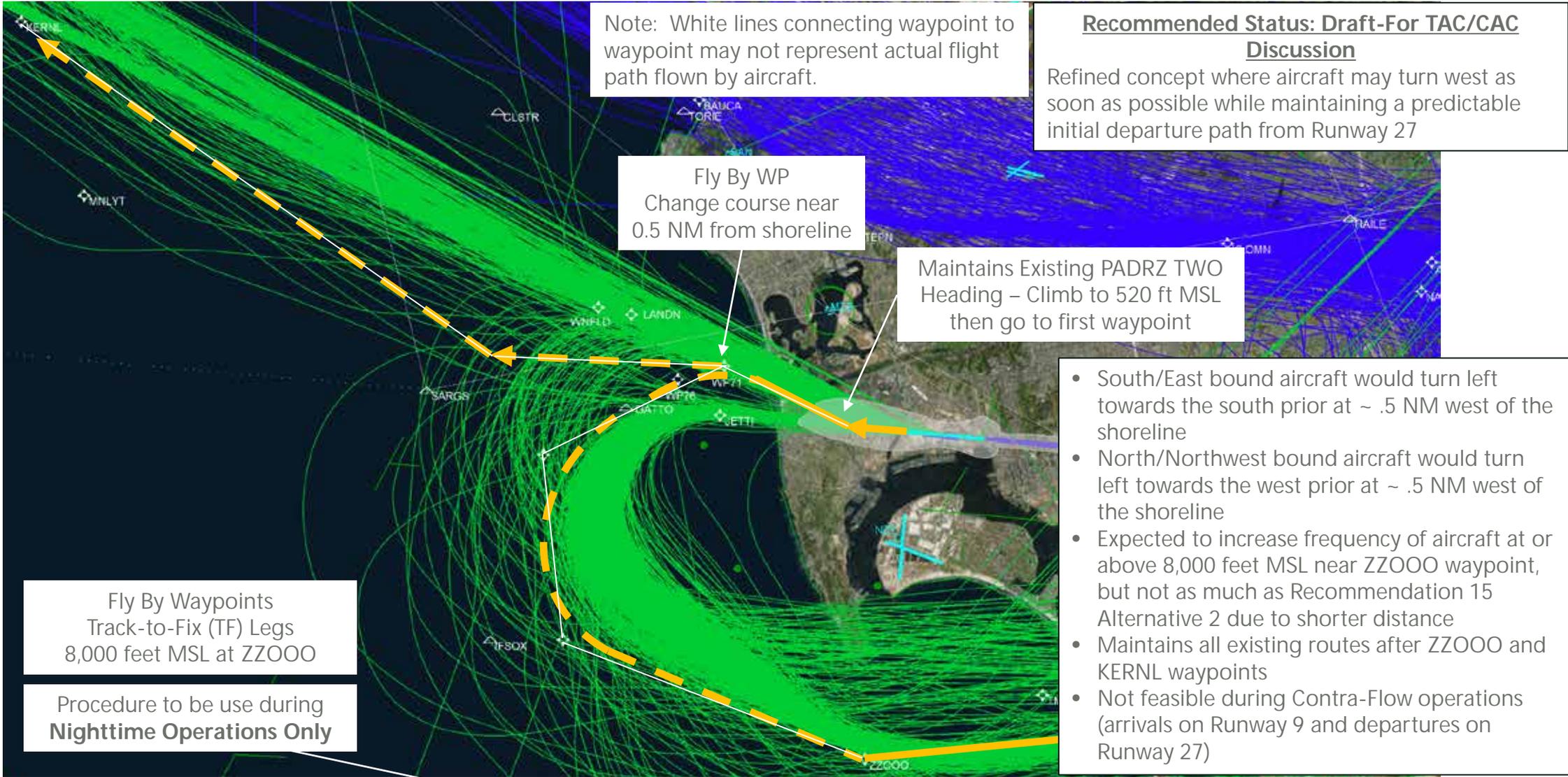
Recommended Status: Draft-For TAC/CAC Discussion

Refined concept where aircraft may turn west as soon as possible while maintaining a predictable initial departure path from Runway 27

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint

Fly By Waypoint

Fly By WP Change course near 0.5 NM from shoreline

- Aircraft would turn left prior at ~ 0.5 NM west of the shoreline
- Compatible with Recommendation 14 – Alternative 4 with same fly by waypoint location
- Keeps nighttime departures south of Point Loma
- Expected to increase frequency of aircraft at or above 8,000 feet MSL near ZZOOO waypoint, but not as much as Recommendation 15 Alternative 2 due to shorter distance
- Maintains all existing routes after ZZOOO waypoint
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)
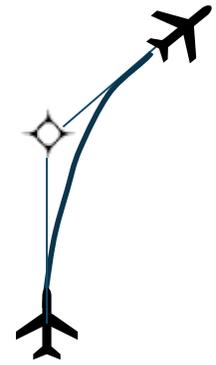
Fly By Waypoints Track-to-Fix (TF) Legs 8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

Composite of Recommendation 14 Alt 4 and Recommendation 15 Alt 4

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Recommended Status: Draft-For TAC/CAC Discussion

Refined concept where aircraft may turn west as soon as possible while maintaining a predictable initial departure path from Runway 27

Fly By WP
Change course near 0.5 NM from shoreline

Maintains Existing PADRZ TWO Heading – Climb to 520 ft MSL then go to first waypoint

Fly By Waypoint

Fly By Waypoints
Track-to-Fix (TF) Legs
8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

- South/East bound aircraft would turn left towards the south prior at ~ .5 NM west of the shoreline
- North/Northwest bound aircraft would turn left towards the west prior at ~ .5 NM west of the shoreline
- Expected to increase frequency of aircraft at or above 8,000 feet MSL near ZZOOO waypoint, but not as much as Recommendation 15 Alternative 2 due to shorter distance
- Maintains all existing routes after ZZOOO and KERNL waypoints
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)

ANAC Noise Recommendation 15 – Alt 5 ELSO to Fly By Turn at 1.5 NM

FAA Order 7110.65X – Divergent Heading for Successive Departures:
- Allows for 10-degree heading from runway end to diverge from aircraft on another heading
- Once lead aircraft is 1 mile away, FAA ATC can release following aircraft as long as heading is 10 degrees or more from lead aircraft
- 10-degree heading only applies from end of departure runway and both departures are on an RNAV procedure, not radar vectored

Recommended Status: Draft-For TAC/CAC Discussion

Modify initial departure heading to direct aircraft on runway heading and then intercept a 285 degree course to the first waypoint located just past 1.5 NM from shoreline

Fly runway heading then turn right to intercept 285 degree course to first waypoint (Vector-to-Intercept a Course to a Fix – VI/CF)

Fly By Waypoint

Fly By WP
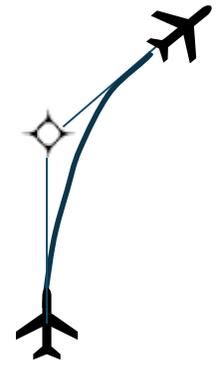Change course 1.5 NM from shoreline

Fly By Waypoints
Track-to-Fix (TF) Legs
8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

- Ensures turns after initial heading do not occur prior to 1.5 NM from shoreline
- Moves noise further south closer to Ocean Beach community and has high potential to effect CNEL 65 or higher area
- Compatible with Recommendation 14 – Alternative 5 with same fly by waypoint location
- Keeps nighttime departures south of Point Loma and increases frequency of aircraft at or over 8,000 feet near ZZOOO waypoint compared to existing radar vector procedure
- Maintains all existing routes after ZZOOO waypoint
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)

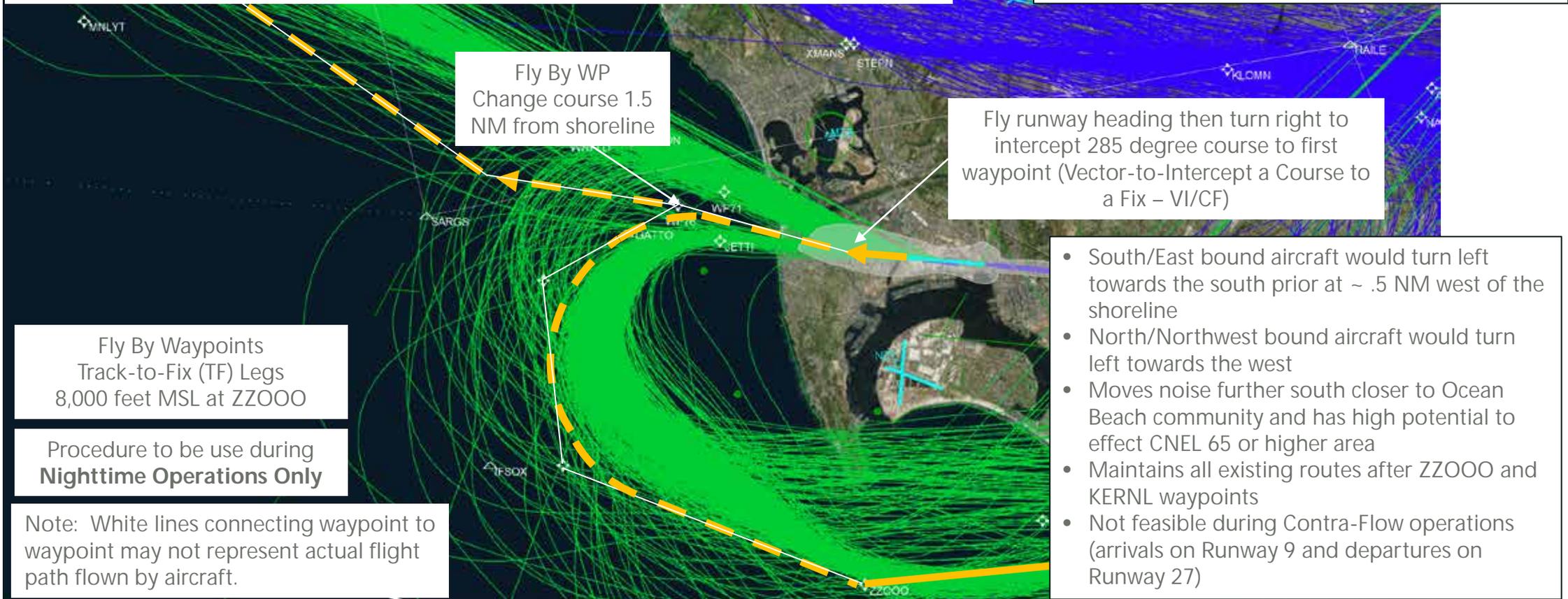# Composite of Recommendation 14 Alt 5 and Recommendation 15 Alt 5

FAA Order 7110.65X – Divergent Heading for Successive Departures:
- Allows for 10-degree heading from runway end to diverge from aircraft on another heading
- Once lead aircraft is 1 mile away, FAA ATC can release following aircraft as long as heading is 10 degrees or more from lead aircraft
- 10-degree heading only applies from end of departure runway and both departures are on an RNAV procedure, not radar vectored

Recommended Status: Draft-For TAC/CAC Discussion

Modify initial departure heading to direct aircraft on runway heading and then intercept a 285 degree course to the first waypoint located just past 1.5 NM from shoreline

Fly By Waypoint

Fly By WP
Change course 1.5 NM from shoreline

Fly runway heading then turn right to intercept 285 degree course to first waypoint (Vector-to-Intercept a Course to a Fix – VI/CF)

Fly By Waypoints
Track-to-Fix (TF) Legs
8,000 feet MSL at ZZOOO

Procedure to be use during **Nighttime Operations Only**

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

- South/East bound aircraft would turn left towards the south prior at ~ .5 NM west of the shoreline
- North/Northwest bound aircraft would turn left towards the west
- Moves noise further south closer to Ocean Beach community and has high potential to effect CNEL 65 or higher area
- Maintains all existing routes after ZZOOO and KERNL waypoints
- Not feasible during Contra-Flow operations (arrivals on Runway 9 and departures on Runway 27)

ANAC Noise Recommendation 16 – Reduce Arrival Noise Over La Jolla and East County Communities
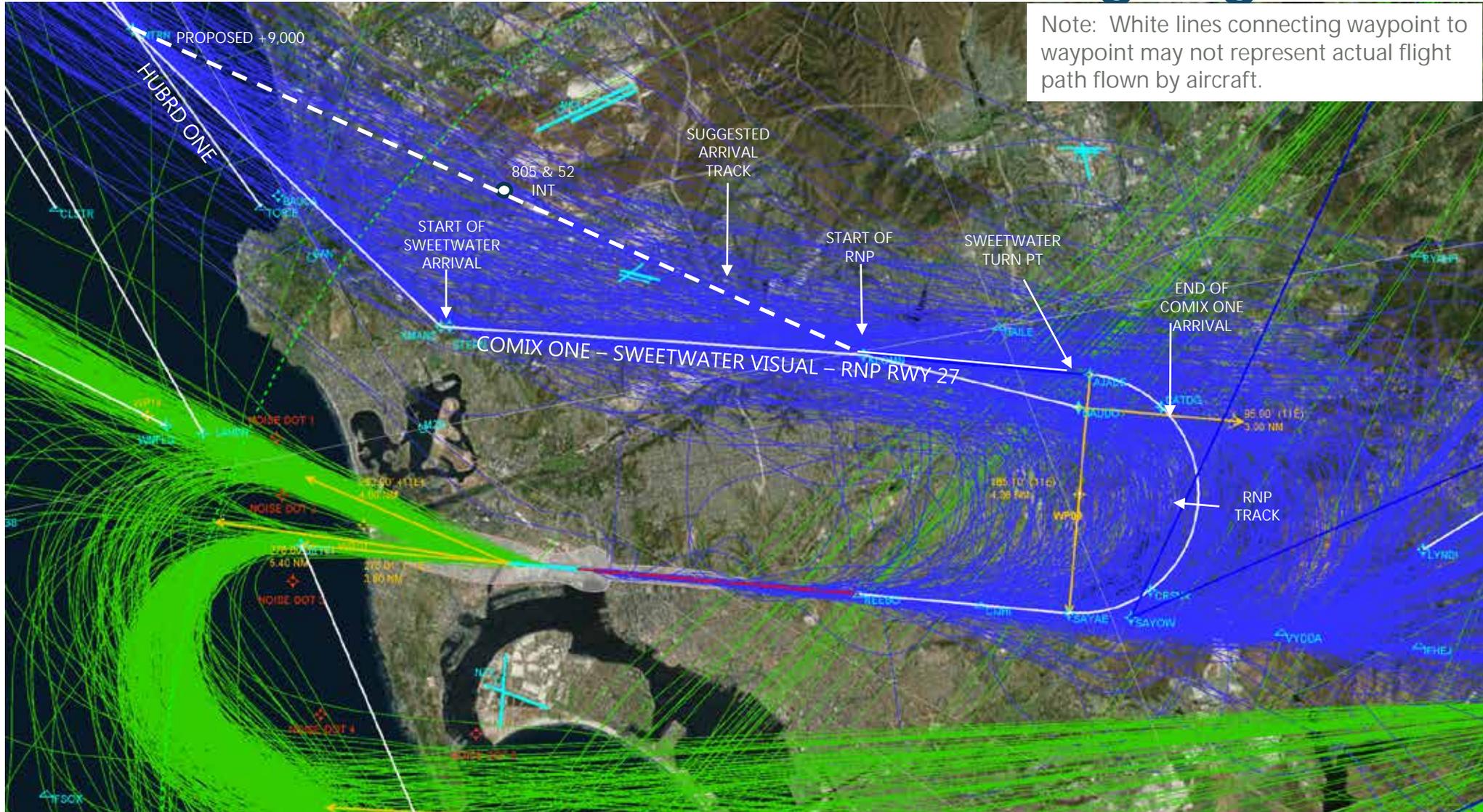
ANAC Noise Recommendation 16 – Existing Flight Tracks

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

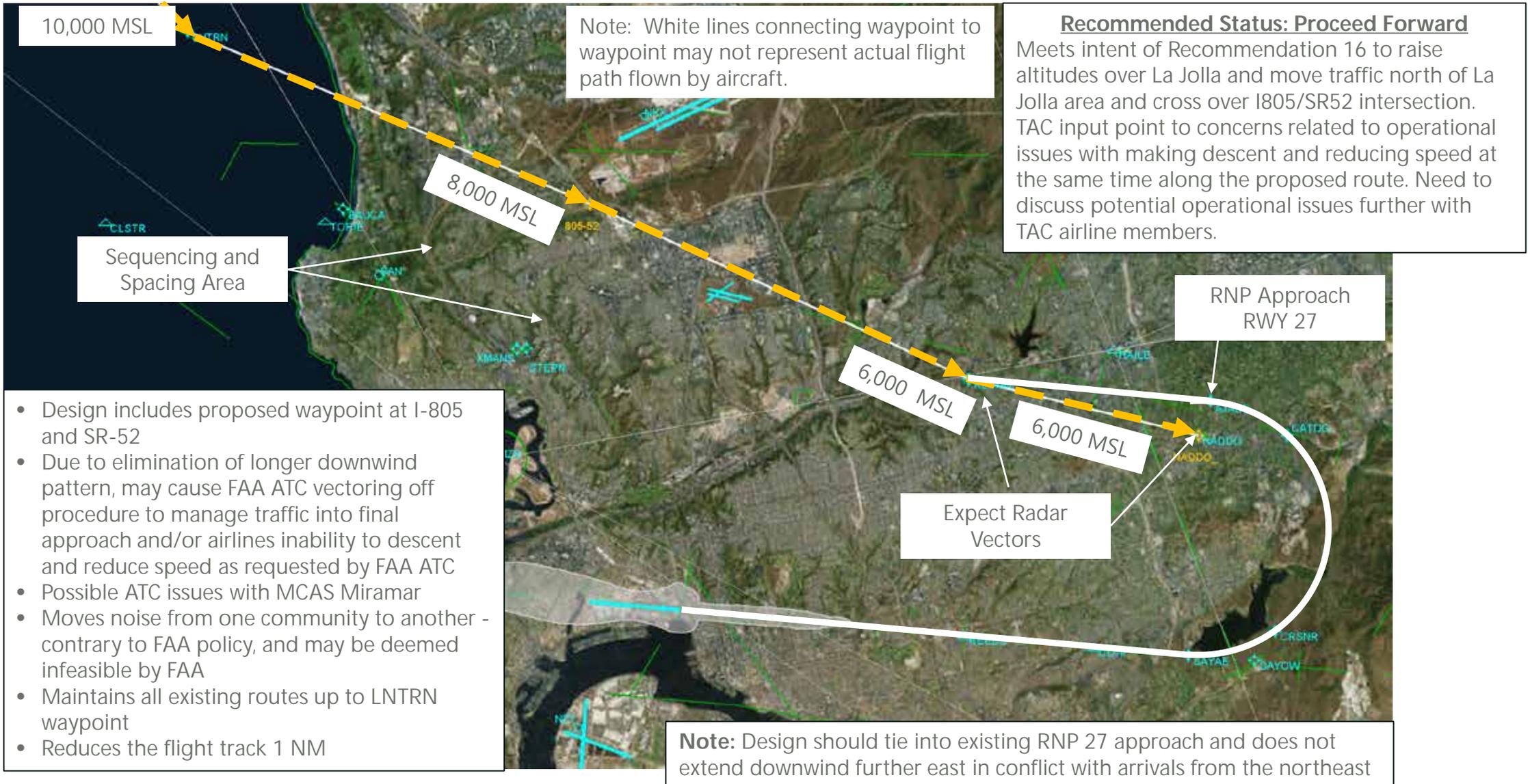# ANAC Noise Recommendation 16 - Alternatives

§ **Alternative 1 – Modified COMIX Arrival – LNTRN to I805/SR52 to KLOMN waypoint**

§ Alternative 2 – Modified COMIX Arrival – LNTRN to KLOMN waypoint

§ Alternative 3 – Modified COMIX Arrival – BAUCA (Over La Jolla Shores Park) to KLOMN waypoint

Note: Item in **bold** is recommended to proceed forward for further assessment

ANAC Noise Recommendation 16 – Alt 1

10,000 MSL

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

8,000 MSL

Sequencing and Spacing Area

Recommended Status: Proceed Forward
Meets intent of Recommendation 16 to raise altitudes over La Jolla and move traffic north of La Jolla area and cross over I805/SR52 intersection. TAC input point to concerns related to operational issues with making descent and reducing speed at the same time along the proposed route. Need to discuss potential operational issues further with TAC airline members.

RNP Approach RWY 27

6,000 MSL

6,000 MSL

Expect Radar Vectors

- Design includes proposed waypoint at I-805 and SR-52
- Due to elimination of longer downwind pattern, may cause FAA ATC vectoring off procedure to manage traffic into final approach and/or airlines inability to descent and reduce speed as requested by FAA ATC
- Possible ATC issues with MCAS Miramar
- Moves noise from one community to another - contrary to FAA policy, and may be deemed infeasible by FAA
- Maintains all existing routes up to LNTRN waypoint
- Reduces the flight track 1 NM

Note: Design should tie into existing RNP 27 approach and does not extend downwind further east in conflict with arrivals from the northeast

ANAC Noise Recommendation 16 – Alt 2

Note: White lines connecting waypoint to waypoint may not represent actual flight path flown by aircraft.

Recommended Status: Do Not Proceed Forward
Does not best meet intent of Recommendation 16 compared to Alternative 1, and is not preferred by CAC members representing La Jolla area.

10,000 MSL

Sequencing and Spacing Area

RNP Approach RWY 27

6,000 MSL

6,000 MSL

Expect Radar Vectors

- Design attempted to let aircraft descend between LANTRN and KLOMN with no interruption
- Due to elimination of longer downwind pattern, may cause FAA ATC vectoring off procedure to manage traffic into final approach and/or airlines inability to descent and reduce speed as requested by FAA ATC
- Possible ATC issues with MCAS Miramar
- Moves noise from one community to another - contrary to FAA policy, and may be deemed infeasible by FAA
- Maintains all existing routes up to LNTRN waypoint
- Reduces the flight track 1 NM

Note: Design should tie into existing RNP 27 approach and does not extend downwind further east in conflict with arrivals from the northeast

ANAC Noise Recommendation 16 – Alt 3

+10,000 MSL

9,000 MSL

Sequencing and Spacing Area

6,000 MSL

6,000 MSL

Expect Radar Vectors

RNP Approach RWY 27

Recommended Status: Do Not Proceed Forward
Does not meet intent of Recommendation 16 to keep traffic further north of La Jolla when crossing the shoreline, fails for low performance aircraft crossing COMIX waypoint at 15,000 feet MSL, and is not preferred by CAC members representing La Jolla area

- Design attempted to keep arrivals north of La Jolla when crossing over the shoreline
- Due to elimination of longer downwind pattern, may cause FAA ATC vectoring off procedure to manage traffic into final approach and/or airlines inability to descent and reduce speed as requested by FAA ATC
- Does not pass flyability for low performance aircraft crossing COMIX at 15,000 feet MSL
- Further south of MCAS Miramar compared to Alt 1 and 2
- Maintains all routes prior to LNTRN waypoint
- Reduction in distance is less than 1 NM compared to COMIX STAR

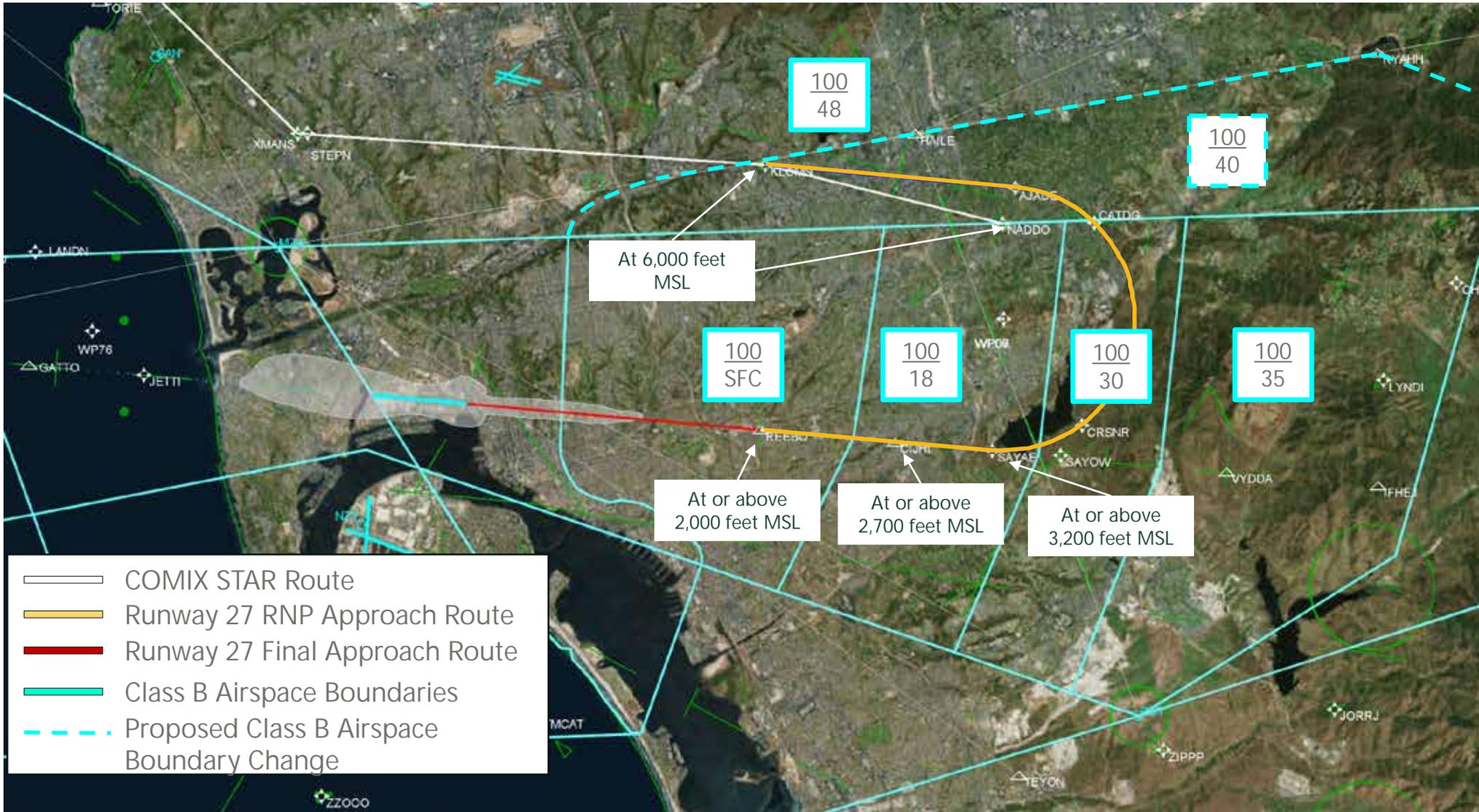**Note:** Design should tie into existing RNP 27 approach and does not extend downwind further east in conflict with arrivals from the northeast
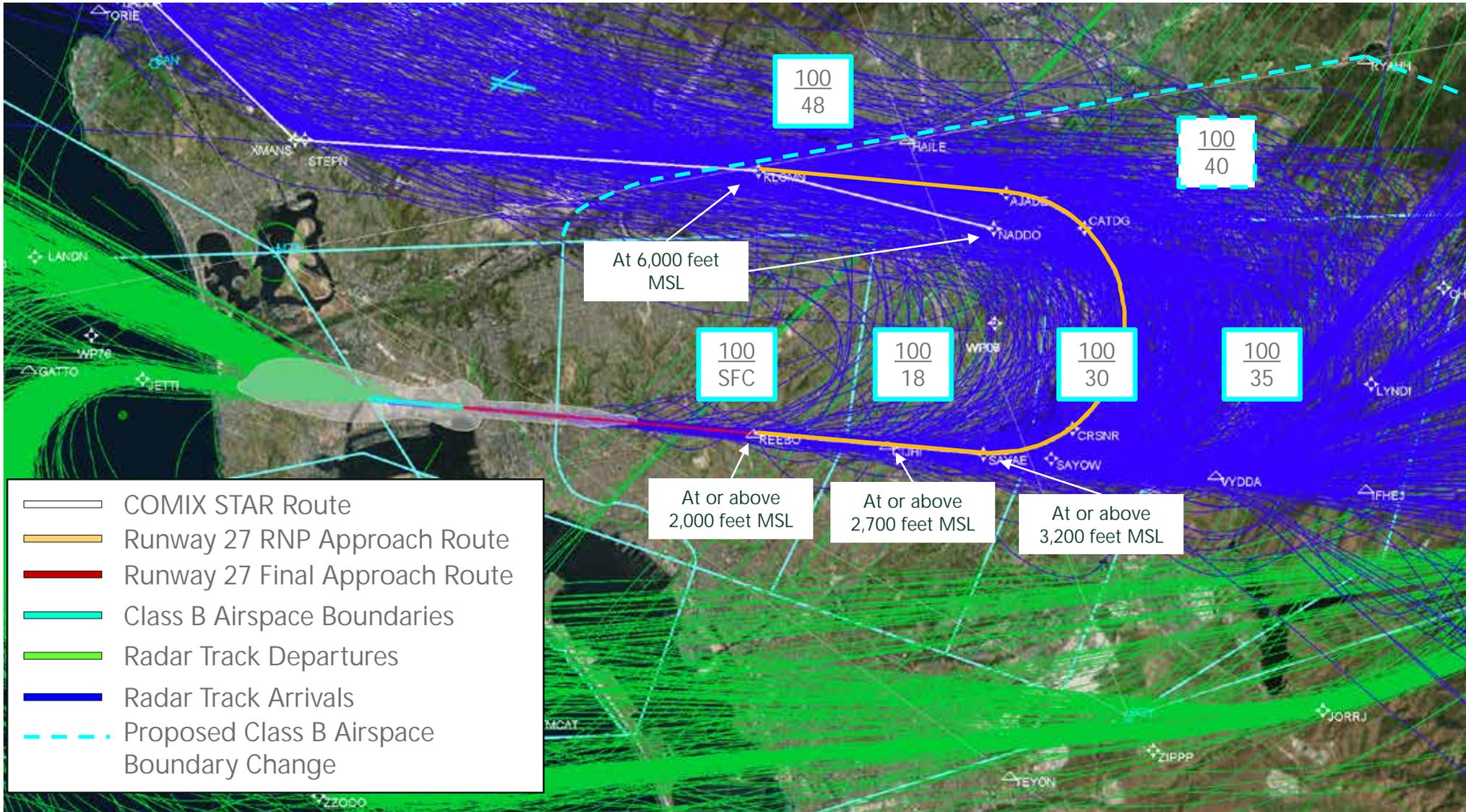
East County SDIA Arrival from Northwest

East County SAN Northwest Arrivals – Procedures and Class B Airspace

East County SDIA Northwest Arrivals Slide – West Flow Flight Patterns

East County Arrivals Slide – Class B Airspace Redesign

Next Steps – Action Items and Next TAC Meeting

Next Steps

§ Input period open until September 13, 2018

§ Review input provided by TAC and CAC members

§ Recommend design concept refinements for Final Phase concept design

§ Begin aircraft noise screening on Final Phase designs proceeding forward

§ Present recommendations on Final Phase designs on October 11th CAC and TAC meeting

§ Present aircraft noise screening results on all Final Phase designs by late November/early December