

Sunshine Coast Airport Flight Path Changes Post Implementation Review (PIR)

DRAFT REPORT

Version 0.1

Effective Date: 09 February 2023

Executive summary

Sunshine Coast Airport Pty Ltd (SCA) operates and manages the Sunshine Coast Airport under a lease from the Sunshine Coast Council (SCC). SCC, as the owner of the airport, initiated the Sunshine Coast Airport Expansion Project (SCAEP) to meet the travel needs of the community and support the region's economic growth. This included the development of a new runway (RWY 13/31) and associated infrastructure, including an upgraded taxiway system and apron extension. An Environmental Impact Statement (EIS) for the SCAEP was prepared by SCC and received approval from the Queensland State Coordinator-General in May 2016.

Airservices developed the final flight path design, based on the approved EIS concept flight path corridors, and was required to environmentally assess the flight paths and procedures it developed. This was completed through the 2018 Targeted Environmental Impact Assessment (TEIA).

The new runway and associated flight paths commenced operations on 14 June 2020. This was an unprecedented time globally, due to the COVID-19 pandemic, with domestic flights in April 2020 having fallen by around 97 per cent from pre-pandemic levels. Extended border closures and stay-at-home orders significantly impacted travel patterns and the nature of operations at Sunshine Coast Airport – as well as all airports nationally and globally.

In accordance with Airservices' National Operating Standard, Post Implementation Reviews (PIRs) are conducted 12 months after airspace and flight path changes to confirm actual noise and aircraft operations and to identify opportunities to improve outcomes for communities. Airservices compares actual operations data with forecasts modelled during final flight path design to identify any variances and the reasons for this. Community feedback is sought on operations and complaint data is reviewed to understand where improvements should be considered. Industry inputs are also considered to understand where flyability, efficiency and operational predictability can be improved.

Airservices finalised the Terms of Reference (TOR) for the Sunshine Coast Airport Flight Path Changes PIR in January 2021, following engagement with the community and industry stakeholders. This included two community meetings, an industry briefing and a public-comment period.

In July 2021, Airservices invited the community to provide feedback and suggestions for Noise Abatement Procedure (NAP) improvements. This was supported by an online community meeting in August 2021 attended by 15 people. Airservices received 76 submissions from the community.

In October 2021, Airservices invited the community and industry to provide feedback on operations and suggestions for flight path alternatives. Airservices hosted a community meeting attended by 28 people and contacted industry directly to request feedback. Airservices subsequently received 105 community submissions and four industry submissions.

The PIR found that actual number of 70 decibel events was consistent with the TEIA across all modelled locations, but that the number of actual 60 decibel events was higher than modelled in Eumundi, Weyba Downs and Castaways Beach. The key reasons for this were found to be the introduction of a new aircraft type that was not flying in this airspace at the time of the modelling – the SF34, and that the modelling had assumed some General Aviation (GA) operations would continue to occur on the existing runway. This runway was decommissioned at the time of the opening of the new runway, with the GA traffic that was expected to use this runway shifted to the new runway.

Following consideration of all submissions and review findings, the PIR has identified the following recommendations which will progress to further design, assessment, and community engagement.

Recommendation 1: Improved information on aviation roles and responsibilities

- Aviation roles and responsibilities to be shared with the Sunshine Coast community (and other communities across Australia) to assist in clarifying which agencies and bodies are responsible for the various elements of aviation management.

Recommendation 2: Investigate feasible flight path change suggestions

- Shift the initial departure path from runway 31 slightly west to track aircraft over cane fields prior to resumption of current tracking to the MOOLO and TAPET SIDs
- Shift the MOOLO SID departure path from runway 31 further north over Lake Weyba

- Shift the runway 13 and 31 REBEG STAR from the north further east over water to avoid Teewah Beach
- Shift the runway 13 RNP-AR short approach slightly south to be equidistant between Marcus Beach and Castaways Beach
- Consider an additional VOR/DME non-precision approach procedure to better facilitate training operations to the new runway
- Reduce the heading change on the runway 31 ITIDE STAR for aircraft arriving from the south
- Relocate waypoint NAVTO on the TAPET SID to achieve RNP navigation requirements
- Review the airspace extending into the Mary River Valley (Kybong Airfield) to allow greater use of the airspace by other aviation users
- No change to current flight paths (include and consider against alternative suggestions)
- Consider opportunities to reduce track miles for industry as part of investigating any flight path changes.

Recommendation 3: Investigate feasible NAP improvements

- Investigate increased sharing between runway 13 RNP-AR short approach with RNP long approach
- Investigate measure to improve adherence to the TAPET SID departure procedure
- Conduct further community engagement into the need for a preferred runway use NAP
- Investigate expanding Aircraft in Your Neighbourhood to include NAP adherence reporting
- Investigate excluding visual tracking to runway 31 (over water) from NAP 2 (*Preferred flight paths for aircraft above 5700kg*)

Recommendation 4: Investigate in parallel with Brisbane Noise Action Plan implementation, potentially feasible flight path suggestions that interface with Brisbane operations

- Shift the runway 13 RNP-AR (short approach) from the south, to track to the west of the airport over land/Maroochy River to avoid crossing coastal communities
- Turn the runway 31 MOOLO SID to the left to track to the west of the airport over land/Maroochy River to avoid crossing coastal communities
- Introduce an RNP-AR short approach to runway 13 from the west
- Introduce a south-west SID departure path from runway 31
- Introduce a north-west SID departure path from runway 31.

Next steps

The recommendations from this PIR will be implemented through Airservices' flight path change processes. This involves a series of stages, depending on the complexity of the change, such as:

- Design – including a safety assessment, simulation, and community and industry engagement.
- Environmental assessment to confirm any impacts, the nature of these impacts and if referral to the Federal Minister for the Environment is required, due to the significance of any impacts.
- Community engagement to seek input to the detailed proposed change or change options.
- Final design to respond to community feedback.
- Regulatory approvals as required.
- Publishing of the new flight path or procedure ahead of implementation.
- Community information to ensure awareness of implementation of new flight paths/s procedures.

No decisions to make changes to the location of flight paths or aircraft operations will be made prior to community engagement with all potentially affected communities.

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1. Purpose

The purpose of this document is to present the findings of a Post Implementation Review (PIR) of the Sunshine Coast Airport flight path and airspace changes related to the Sunshine Coast Airport Expansion Project (SCAEP). The PIR examined changes implemented by Airservices on 14 June 2020 to support the new runway operations at Sunshine Coast Airport.

Here, Airservices Australia also outlines the findings of the review, including the outcomes of our community and industry stakeholder engagement held throughout the PIR. For the purposes of this report, the project is referred to as the “Sunshine Coast PIR”.

2. Background

Sunshine Coast Airport Pty Ltd (SCA) operates and manages the Sunshine Coast Airport under a lease from the Sunshine Coast Council (SCC). SCA is responsible for the safe and secure operation, maintenance, commercial development, and strategic planning for the airport.

Located at Marcoola, approximately 90km north of Brisbane, the airport caters for both domestic and international travel, and supports a variety of general aviation activities, including flight training. It is currently serviced by four major airlines, providing direct access to Adelaide, Canberra, Emerald, Melbourne and Sydney. In addition, Air New Zealand operates an Auckland service.

In 2019, SCA reported passenger movements of just under 1,264,000 for the financial year 2018/19, with a growth rate of 5.7 per cent. This makes it Australia’s fastest growing airport, according to the Bureau of Infrastructure and Transport Research Economics (BITRE).

SCC, as the owner of the airport, initiated the Sunshine Coast Airport Expansion Project (SCAEP) to better meet the travel needs of the community and support the region’s economic growth. This included the development of a new runway (RWY 13/31) and associated infrastructure, including an upgraded taxiway system and apron extension.

The new runway and associated flight paths commenced operation on 14 June 2020.

This project coincided with unprecedented aviation changes globally, due to the COVID-19 pandemic, with domestic flights in April 2020 having fallen by around 97 per cent when compared with pre-pandemic levels. Extended border closures and stay-at-home orders significantly impacted travel patterns and the nature of operations at Sunshine Coast Airport – as well as all airports nationally and globally.

2.1 New runway development

SCA is located at Marcoola, 4km north of the Maroochy River mouth, and about 9km from the centre of Maroochydore. The airport was constructed between 1959-1961, predating most of the surrounding development. It is bounded to the west by the Sunshine Motorway, and David Low Way to the south and east.

A mix of land uses have developed around the airport, with the most prominent being low-density, detached residential developments at Marcoola, Mudjimba, Twin Waters and Pacific Paradise. Immediately west of the existing terminal precinct, SCA is adjoined by a light industrial area on Runway Drive. North and south of the new runway alignment are the two separate portions of the Mt Coolum National Park.

The alignment of the new runway was chosen to optimise the use of prevailing winds and was influenced by several other factors, which can be viewed [here](#).

Where a major change (for example, a new runway) is proposed that is likely to result in an impact that is considered “significant” in terms of the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act), the proponent for the change is required to prepare and submit an Environmental Impact Statement (EIS) via the relevant planning authority.

An EIS was completed in 2016, with approval granted by the Queensland State Government in May 2016. A copy of the EIS is available [here](#), outlining concept-level flight path corridors, associated aircraft movement assumptions and noise impact assessments.

Airservices developed the final flight-path design based on the approved EIS concept flight paths. Environmental assessment of the final flight paths and associated procedures was completed as part of Airservices' 2018 and 2019 Targeted Environmental Impact Assessment (TEIA).

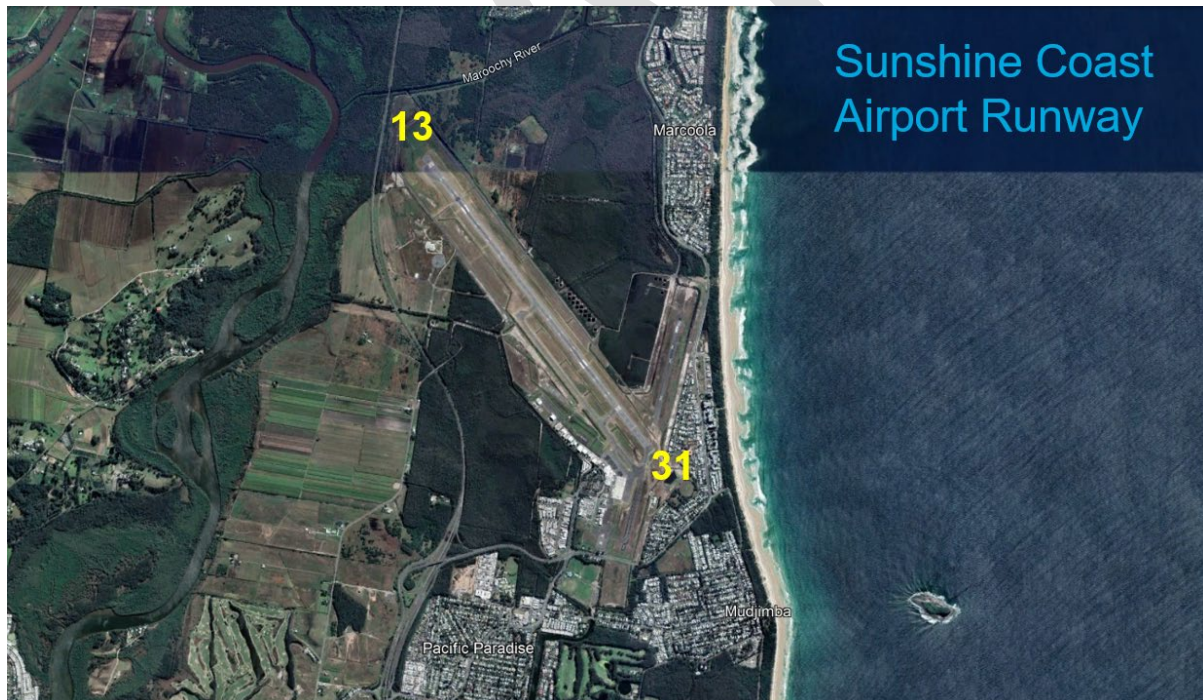
In October 2019, SCA released its [Master Plan 2040](#), which included revised forecast operations and reflected the intent to close the existing runway - Runway 18/36. The approved Master Plan also included the revised Australian Noise Exposure Forecast (ANEF), based on Runway 13/31 operations. This is available via the [Sunshine Coast Airport Aircraft Noise Information Tool](#).

In June 2020, construction of the new 2450m x 45m north-west/south-east runway was completed and officially handed over to the SCA for operation. Construction of associated infrastructure as part of SCAEP, including an upgraded taxiway system and apron expansion, was completed in December 2020. The former runway (18/36) was decommissioned upon opening of the new runway on 14 June 2020.

2.2 Runway description

Runway names are determined by the compass heading to which they align. Sunshine Coast Airport's pre-existing runway was referred to as "18" and "36" based on the headings at each runway end (180 and 360 degrees). The new runway is referred to as "13" and "31" based on the compass headings at each end (130 and 310 degrees).

The numerical designation is based on the direction the aircraft is travelling in. For example, flights taking off over-water on the new runway depart runway 13, heading 130 degrees. Those arriving to the runway over the water arrive on runway 31, heading 310 degrees.



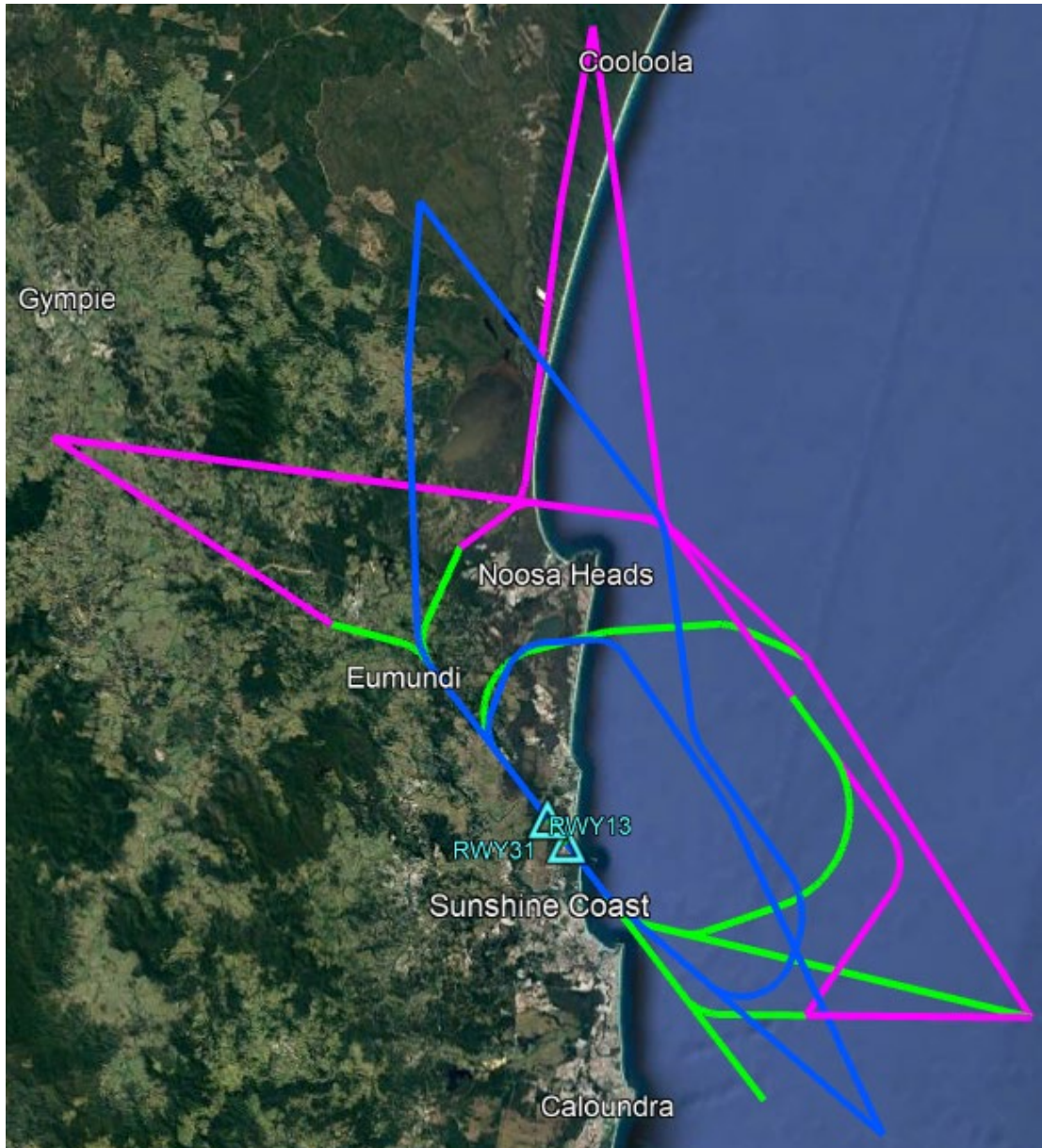
2.3 Runway allocation

Weather conditions largely determine the allocation of runway ends, with optimum safety conditions occurring when aircraft arrive or depart into the wind.

Noise Abatement Procedures (NAPs) in place at Sunshine Coast Airport also nominate a preferred runway for use when conditions allow. This prioritises the use of runway 13 for take-off and runway 31 for landing, with the aim of directing as many movements as possible over-the-water.

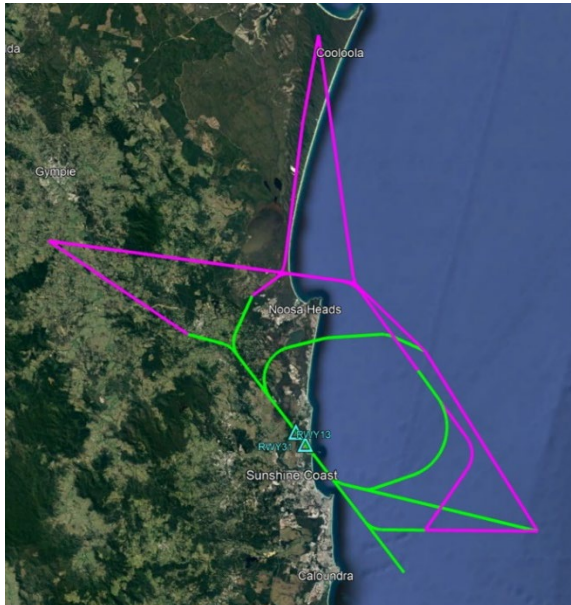
2.4 Current flight path design

The current flight path design is shown in Figure 2, with arrival paths indicated in pink, approach procedures in green, and departure paths in blue.

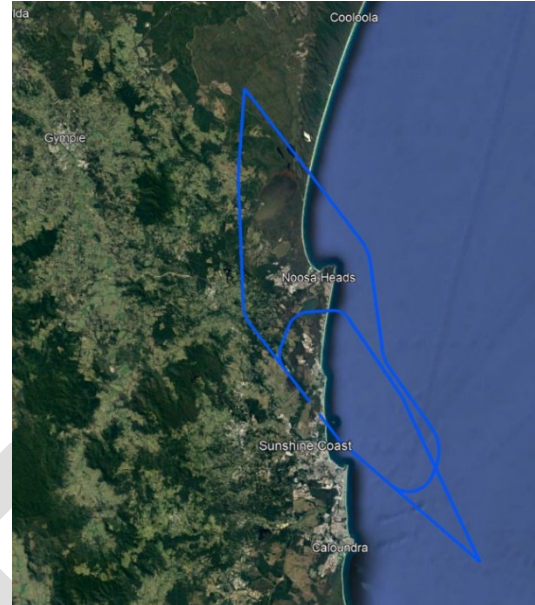


The Standard Instrument Arrival (STAR) paths in pink, and Standard Instrument Departure (SID) paths in blue, connect aircraft to and from other ports across the country and around the world via a complex higher altitude enroute network which supports both civil and military operations.

Closer to the airport, the STARs connect to the approach procedures (green) at a range of points, catering for different aircraft performance and technology. Similarly, departing aircraft (blue) also turn at different points based on the direction of travel and aircraft performance.



Current arrival STARs (pink) and approach procedures (green)



Current SIDs (blue)

Flight navigation also requires the use of waypoints, which are specified geographical locations where an aircraft will intercept the next segment of the flight route. Each waypoint is a five-letter capitalised word (that is pronounceable and distinct to pilots and air traffic controllers), for example SMOKA or BLAKA.

Although flight paths are shown as a line on map, the actual paths flown can be a number of kilometres wide. Aircraft may fly differently within these corridors for a range of reasons, including aircraft type, speed and weight. Aircraft may deviate from published flight paths for a range of reasons, including weather and operational requirements.

General aviation operations, including helicopters, commonly fly using visual flight rules (VFR), where the pilot uses visual references on the ground, rather than flying on one of the standard flight paths.

2.5 Arrival and departure procedures

Sunshine Coast Airport has arrival and departure procedures based on the following technologies

(★ indicates approximate runway location):

Required Navigation Performance (RNP)¹

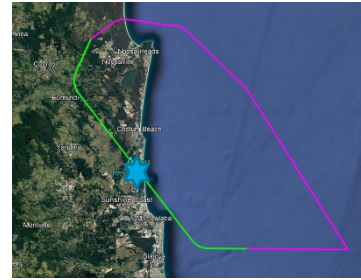
RNP uses on-board global navigation satellite systems (GNSS) to provide guidance to pilots in all weather conditions, including inclement weather and low visibility. RNP procedures have previously been referred to as RNAV procedures. Sunshine Coast locals may know this as the “long approach”.

¹ The International Civil Aviation Organization has mandated changes to the naming conventions for aeronautical charts, and all published RNAV(GNSS) approaches are progressively being renamed to RNP approaches

Runways 13 and 31 STAR - ITIDE TWO ZULU ARRIVAL (RNAV)

Arrivals from the south track over water on STARs (pink) from the ITIDE waypoint to connect to the RNP Z procedure (green). They use:

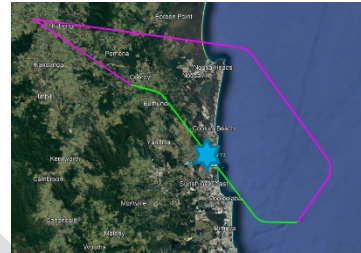
- runway 31 (southern runway end) when winds are from a predominantly northerly direction
- runway 13 (northern runway end) when winds are from a predominantly southerly direction.



Runways 13 and 31 STAR - SEBVA ONE ZULU ARRIVAL (RNAV)

Arrivals from the west track on STARs (pink) from the SEBVA waypoint to connect to the RNP Z procedure (green). They track:

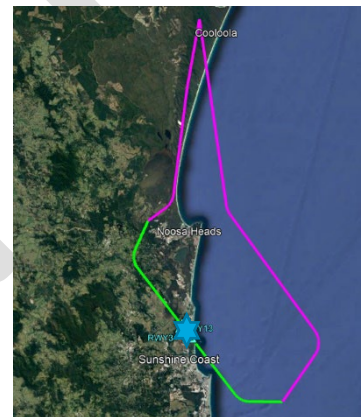
- over land then water to runway 31 (southern runway end) when winds are from a predominantly northerly direction
- over land to runway 13 (northern runway end) when winds are from a predominantly southerly direction.



Runways 13 and 31 STAR - REBEG TWO ZULU ARRIVAL (RNAV)

Arrivals from the north track on STARs (pink) from the REBEG waypoint to connect to the RNP Z procedure (green). They track:

- over water to runway 31 (souther runway end) when winds are from a predominantly northerly direction
- along the coastline to runway 13 (northern runway end) when winds are from a predominantly southerly direction.



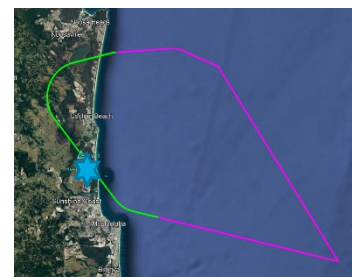
Required Navigation Performance – Authorisation Required (RNP-AR) ²

RNP-AR uses on-board avionics equipment and can only be flown by CASA-authorized pilots and approved aircraft. These approaches allow aircraft to fly with a higher degree of accuracy and assist in providing safe and predictable landings in all weather conditions, including inclement weather and low visibility. RNP-AR procedures have previously been referred to as “RNP” and “Smart Tracking”.

Runways 13 and 31 STAR - ITIDE TWO WHISKEY ARRIVAL (RNAV)

Arrivals from the south track over water on a STAR (pink) from the ITIDE waypoint to connect to the RNP-AR W procedure (green) using:

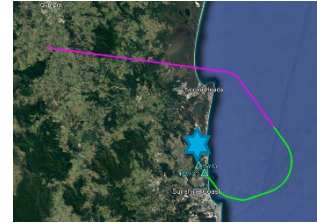
- runway 31 (southern runway end) when winds are from a predominantly northerly direction
- runway 13 (northern runway end) when winds are from a predominantly southerly direction.



² Due to the mandated ICAO naming convention changes (see footnote above), the full acronym RNP-AR is being used in this report to avoid confusion with the required terminology change of RNAV(GNSS) to RNP. Aeronautical charts are being updated to display ‘RNP (AR)’.

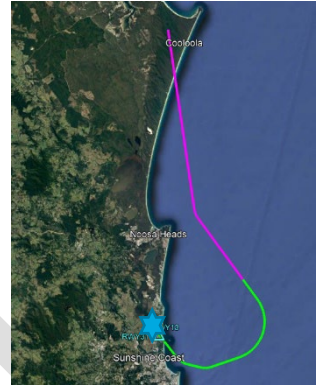
Runway 31 STAR - SEBVA ONE X-RAY ARRIVAL (RNAV)

Arrivals from the west track over land on a STAR (pink) from the SEBVA waypoint to connect to the RNP-AR procedure (green) to Runway 31 when winds are from a predominantly northerly direction.



Runway 31 STAR - REBEG TWO X-RAY ARRIVAL (RNAV)

Arrivals from the north track over water on a STAR (pink) from the REBEG waypoint to connect to the RNP-AR X procedure (green) to Runway 31 (southern runway end) when winds are from a predominantly northerly direction.



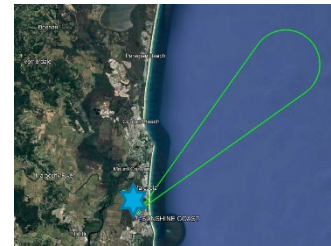
Light aircraft arrival procedures

This procedure uses an on-ground, short-range radio navigation to emit radio signals which allow pilots to determine their position.

Non-directional beacon (NDB) or very high frequency omnidirectional range (VOR).

The approach commences overhead the Sunshine Coast Airport, proceeds outbound over water, and returns inbound over water.

This procedure positions the aircraft in the circuit area for landing on either runway. This approach is predominantly used by light, training aircraft.



The Sunshine Coast Airport departure and approach procedure aerodrome and procedure charts are available through the Airservices [Aeronautical Information Package](#).

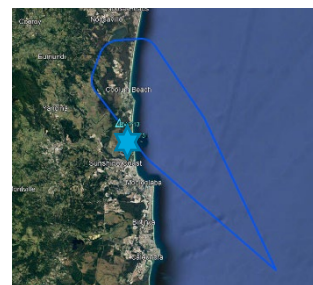
Departure procedures

Procedural SIDs in place at Sunshine Coast Airport use on-board global navigation satellite systems (GNSS) to provide guidance to pilots in all weather conditions, including inclement weather and low visibility.

Runways 13 and 31 SID - MOOLO ONE DEPARTURE (RNAV)

Departures track on SIDs (blue) from the runway to the MOOLO waypoint to connect to the enroute network to the south. They use:

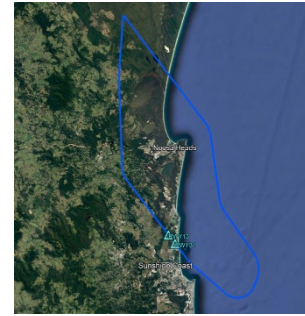
- runway 31 (southern runway end travelling north) turning right to travel over water when winds are from a predominantly northerly direction
- runway 13 (northern runway end travelling south) over water when winds are from a predominantly southerly direction.



Runways 13 and 31 SID - TAPET ONE DEPARTURE (RNAV)

Departures track on SIDs (blue) from the runway to the TAPET waypoint to connect to the enroute network to the north. They use:

- runway 31 (southern runway end travelling north) travelling over land when winds are from a predominantly northerly direction
- runway 13 (northern runway end travelling south) over water turning left to travel north when winds are from a predominantly southerly direction.



2.6 General Aviation Movements

General aviation movements account for a significant proportion of traffic at Sunshine Coast Airport, contributing greater numbers than scheduled and non-scheduled passenger transport operations.

In October 2022, there were approximately 3,200 general aviation movements compared to 862 scheduled and other movements. This proportion of movements has been typical for Sunshine Coast Airport over the past two years.

General aviation movements also include training circuits. A circuit is a standard flight path for aircraft to follow to safely manage the flow of aircraft at busy airports. Circuit training is the first stage of practical pilot training focused on take-offs and landings. It involves the pilot making approaches to the runway or helipad, touching down and then applying power to take off again. This is undertaken in accordance with Civil Aviation Safety Authority (CASA) Regulations which are consistent with international practices.

3. PIR Considerations

3.1 Terms of Reference

The Terms of Reference (TOR) for the Sunshine Coast PIR were developed in consultation with the community and other stakeholders, including the aviation industry and the Aircraft Noise Ombudsman. A number of objectives were determined throughout this engagement, providing guidance for review activity based on specific areas of interest. These included:

1. Review the forecast noise levels in the Airservices EIA against actual aircraft movement data and noise levels post-implementation and provide updated information to the community.
2. Review the effectiveness of the Sunshine Coast Airport NAPs and identify any potential improvements
3. Identify opportunities to minimise the impact of aircraft operations on the community, including investigation of community suggested alternatives, and consider these against Airservices [Flight Path Design Principles](#).
4. Seek and consider feedback from industry: airport, airlines, general aviation operators and industry associations, to identify opportunities for potential improvement to operational and network efficiency and consider these against Airservices' [Flight Path Design Principles](#).
5. Engage genuinely with the community to provide opportunities to influence the outcomes of the PIR in accordance with Airservices [Community Engagement Framework](#).

The scope of the PIR included all changes made by Airservices to support the implementation of operations to and from the new runway. This included arrival and departure paths, procedures, NAPs, and changes to the Sunshine Coast airspace. It also included a review of community and industry stakeholder suggestions for improvements to existing operations.

The scope did not include elements that are outside Airservices' remit.

Full details of the PIR objectives, scope and other key considerations can be found in the [Sunshine Coast Flight Path Changes Post Implementation Review \(PIR\) Terms of Reference](#). A summary of the PIR objectives and scope is provided in **Appendix A**.

3.2 COVID-19 considerations

At the time of creating the TOR, the aviation industry was significantly impacted by the COVID-19 pandemic. This resulted in actual operations at Sunshine Coast Airport being inconsistent with what was forecast in earlier assessments.

With a lack of certainty about when operations would stabilise after the re-opening of international and state borders, the TOR identified the need for a two-phase PIR. Phase one was proposed to assess COVID-19 impacted operations. Phase two was proposed to evaluate post-pandemic operations, at a time when representative air traffic numbers returned, including international air traffic.

Throughout the pandemic, Sunshine Coast Airport was supported by an increase in domestic travel with international borders closed and was not as affected by the downturn in air travel as some of Australia's larger international airports. In April 2022, with COVID-19 restrictions lifting, a strong return of domestic aircraft operations was experienced across the country, including at Sunshine Coast Airport. There was also a return of some international travel, although not to pre-COVID-19 levels.

This return of aircraft operations has allowed the PIR to be completed in a single-phase, enabling recommendations to be confirmed and progressed immediately and without the need for a further review phase.

4. Summary of findings

Section 7 of the TOR outlines the scope of the review and specific elements to be considered.

The following summary of findings is in response to the PIR scope. As noted above, the scope was initially proposed over two phases, but has been consolidated into a single phase. Where a scope element appears in both phases in the TOR, it has been noted only once in this report.

More detailed findings are provided in **Appendix B**, including links to a number of documents providing fuller assessment information.

4.1 PIR scope and related findings

Description	Result
Consideration of community suggested noise alternatives submitted in 2019 and during the PIR	Sections 6 and 7 of this report identify community suggestions for NAP and flight path alternatives. The Sunshine Coast community will be engaged further as part of the implementation of the PIR recommendations.
Modelling of current noise impacts based on actual movement data	In July 2021, Airservices produced a Noise Modelling Review report to provide updated modelling of noise impacts based on actual operations. This was to provide information on noise levels ahead of commencement of the noise monitoring program. A copy of the report can be found here .
Review of forecast noise levels in the TEIA against actual noise levels	Actual noise results between October 2021 - September 2022 were measured against modelled forecasts prepared for the 2019 TEIA: Mudjimba: The actual number of 60 decibel events was consistent with the TEIA. A reduction in the actual number of 70 decibel events was observed, suggesting the modelling in this location was conservative. Yandina: The actual number of 60 decibel events was consistent with the TEIA. A slight reduction in the actual number of 70 decibel events was observed, suggesting the modelling in this location was slightly conservative. Eumundi: The actual number of 70 decibel events was consistent with the TEIA. A slight increase in the number of 60 decibel events

Description	Result
	<p>was observed. This is likely due to differences in the aircraft types modelled versus actual aircraft types (e.g., A320, B712, B738, and F70 aircraft were modelled in the TEIA, but the SF34 is the second-most common aircraft captured at the Eumundi NMT after the B738). Another factor could be changes in GA runway usage – modelling assumed some GA activities on the pre-existing runway, 18/36, however this was decommissioned so all actual movements are on the new runway, 13/31.</p> <p>Weyba Downs: The actual number of 70 decibel events was consistent with the TEIA. An increase in the number of 60 decibel events was observed. This is likely due to GA runway usage. Modelling assumed some GA activities on the pre-existing runway, 18/36, however this was decommissioned so all actual movements are on the new runway, 13/31, and/or meteorological conditions, aircraft thrust settings, height, and slant distances.</p> <p>Castaways Beach: The actual number of 70 decibel events was consistent with the TEIA. An increase in the number of 60 decibel events was observed, likely due to GA runway usage. Modelling assumed some GA activities on the pre-existing runway, 18/36, however this was decommissioned so all actual movements are on the new runway, 13/31, and/or meteorological conditions, aircraft thrust settings, height, and slant distances.</p> <p>Further details of this comparison can be found in Appendix B.</p>
Review of scheduled Instrument Flight Rules (IFR) operations compliance	<p>Analysis of aircraft tracking against the published flight paths since July 2020 indicates an adherence rate of 77 per cent for SIDs (departure paths) and 81 per cent for STARs (arrival paths) since July 2020.</p> <p>The adherence rate for January-October 2022 was notably higher, with, on average, 86 per cent of flights adhering SID paths and 88 per cent to STAR paths.</p> <p>The lower figures for the whole period since the runway opened are likely due to reduced adherence during the first month's post-runway opening, when airlines and ATC transition to the new flight paths and procedures.</p>
Review ATC traffic management including application of NAPs and management of GA operations	<p>Sunshine Coast ATC applies the NAPS and the airport's Fly Neighbourly Agreements (FNA) for fixed-wing aircraft and helicopters. The application of the NAPS and FNA can be constrained by operational requirements and meteorological conditions and the pilot in command has ultimate responsibility for the safe operation of the aircraft and may require a different operation.</p> <p>A review of NAP adherence found:</p> <p>NAP 1 – Preferred Runways</p> <p>On average the preferred runway for jet departures from runway 13 and jet arrivals to runway 31 was used in the intended NAP configuration 52 per cent of the time. Meteorological conditions, namely wind direction, was the main reason for applying the alternative runway direction.</p> <p>NAP 2 – Preferred Flight paths (aircraft >5700KG)</p> <p>As noted above, analysis of aircraft tracking against the published flight paths since July 2020 indicates an adherence rate of 77 per cent</p>

Description	Result
	<p>for SIDs (departure paths) and 81 per cent for STARs (arrival paths) since July 2020.</p> <p>NAP 3 – Training Flights – ATC approval requirement</p> <p>No data measures available to Airservices associated with the operation of this NAP.</p> <p>A booking system and process for Air Traffic Control (ATC) notification has been implemented and is in use at Sunshine Coast Airport.</p> <p>NAP 4 – Other Restrictions</p> <p>A summary of monthly approvals to operate outside of tower hours (“overnight operations”) can be found here.</p> <p>Sunshine Coast Airport does not have ground radar infrastructure in place to monitor and record data on ground movements (i.e., intersection departure adherence).</p> <p>Data collected since runway opening in 2020 indicates that 99 per cent of jet departures adhere to the prescribed 7 per cent climb gradient.</p> <p>Appendix B of this report provides further details of the review of NAP adherence.</p> <p>GA Operations</p> <p>GA operations were managed by Sunshine Coast ATC tower in line with Class D airspace operating procedures.</p>
Review extent to which NAPs can be enhanced based on level of compliance	<p>Based on the findings of the PIR, an opportunity to enhance NAP compliance was identified in relation to the SID TAPET ONE departure procedure which has notably lower compliance rates than the SID MOOLO ONE departure.</p> <p>Airservices will conduct further investigation into enhancing the adherence of this procedure as an outcome of the PIR.</p>
Identify opportunities to minimise impacts on communities	<p>Sections 6, 7, and 9 of this report identifies recommendations to minimise the impact of aircraft operations on the community. The Sunshine Coast community will be engaged further as part of the implementation of the PIR recommendations.</p>
Review community information and potential improvements to explain Airservices role and responsibility	<p>Since the implementation of the new flight paths at the Sunshine Coast, Airservices Australia has introduced a number of key improvements to flight path design and community engagement practices. Airservices is aiming to better balance community noise impacts against flight path design drivers; provide greater transparency around decision-making; and offer more timely opportunities for community input to airspace changes.</p> <p>The following key improvements have been introduced:</p> <ul style="list-style-type: none"> • Airservices now engages based on noticeability, rather than defined noise levels, recognising low-ambient noise communities will experience greater noise disturbance. • Flight Path Design Principles (FPDP) were introduced in 2020. These seek to achieve a balance between often-competing priorities during flight path design (efficiency, community impact, operational complexity, emissions), having given regard to safety as the highest priority.

Description	Result
	<ul style="list-style-type: none"> A Community Engagement Framework was introduced in 2021. This provides a number of commitments to the community and outlines the approach to engagement, including a focus on early engagement, clear communication of potential impacts, and genuine opportunities to influence design outcomes. <p>As part of the Brisbane Airport New Parallel Runway Flight Paths PIR, a document detailing the roles and responsibilities of all aviation bodies was published. This information can be shared more broadly across all airspace and flight path change locations to confirm accountability for the various aspects of aviation management.</p>
Seek industry feedback on the operational efficiency, performance and flyability of the flight paths and the effects of the change on overall network efficiency	<p>Section 8 of this report identifies industry feedback and suggestions for NAP and flight path alternatives. Industry will be engaged further as part of the implementation of the PIR recommendations.</p>
Consideration of opportunities identified by ATC and industry to enhance operational efficiency and performance	<p>Section 8 of this report identifies industry feedback and suggestions for NAP and flight path alternatives.</p> <p>Section 9 of this report identifies Airservices' feedback and improvement opportunities.</p>
Compare actual operations against modelled forecasts, including consideration of the effect of closure of runway 18/36	<p>Actual operations between October 2021-September 2022 were compared to modelled assumptions reflected in the 2019 TEIA:</p> <ul style="list-style-type: none"> The TEIA assumed GA aircraft would use both the existing runway, 18/36, and the new runway, 13/31. However, with the decommissioning of runway 18/36, all GA flights now use the new runway, 13/31. In 2018, SAAB SF34 aircraft were introduced to Sunshine Coast airport. These aircraft were not part of the earlier TEIA assumptions. These aircraft primarily fly over the Eumundi area. <p>Further details of this comparison can be found in Appendix B.</p>
Review TEIA community information against actual noise outcomes	<p>Community information presented during pre-implementation engagement was completed based on the TEIA findings, and reflected the assumptions noted above that have since changed.</p>
Engage with the community on noise impacts and information	<p>Engagement with the community has been ongoing throughout the PIR, including:</p> <ul style="list-style-type: none"> A PIR commencement meeting held on 19 September 2020 A TOR engagement meeting held on 8 December 2020 A noise modelling, monitoring and NAPs online session held on 5 August 2021 A suggested flight path and NAP improvements workshop held on 18 November 2022. <p>In addition, formal submission periods have been provided for:</p> <ul style="list-style-type: none"> Draft PIR TOR – 2 October-1 November 2020 Updated PIR TOR – 11 December 2020-17 January 2021 PIR Community Engagement Plan – 29 March-30 April 2021

Description	Result
	<ul style="list-style-type: none"> - Temporary Noise Monitoring expression of interest – 31 May-25 June 2021 - NAP suggested improvements – 20 July-13 September 2021 - Suggested flight path alternatives – 11 October-24 December 2021.
<p>Updated analysis of aircraft movements based on actual operations</p>	<p>Analysis of actual aircraft operations between July 2020 and September 2022 has identified lower than expected traffic volumes on all procedures during the COVID-19 affected period (between July 2020 and November 2021).</p> <p>Following the return of operations post-COVID-19, it was found that:</p> <ul style="list-style-type: none"> - RWY 13 RNP-AR (short approach to northern runway end) is the most frequently used arrival, with 470 arrivals in the busiest month (April 2022) and an average of 281 arrivals across the period January to September 2022 - RWY 13 RNP (long approach to northern runway end) experienced 208 arrivals in the busiest month (April 2022) and an average of 148 arrivals across the period January to September 2022 - RWY 31 arrivals (to the southern runway end) experienced 80 arrivals in April 2022 but 247 arrivals in its busiest month (September 2022) and an average of 151 arrivals across the period January to September 2022. - RWY 13 (to the south) experienced 672 departures in the busiest month (April 2022) and an average of 445 departures across the period January to September 2022. - RWY 31 TAPET SID (departing to the north for destinations to the north) experienced 15 departures in April 2022 increasing to 35 in the busiest month (July 2022) and an average of 24 departures across the period January to September 2022 - RWY 31 MOOLO SID (departing to the north for destinations to the south) experienced 53 departures in April 2022 increasing to 195 in the busiest month (September 2022) and an average of 111 departures across the period January to September 2022 <p>Appendix B provide more detailed data on these actual aircraft movements.</p> <p>Aircraft In Your Neighbourhood was introduced for the Sunshine Coast airspace on 30 June 2020 and provides updated information on actual aircraft operations.</p>
<p>Review of noise complaint data</p>	<p>In the two-year period from runway opening in June 2020 to June 2022, 4,970 complaints have been received from 705 individual complainants.</p> <p>The highest number of complaints were received from the Mudjimba community. Complaints related to runway 13 departures and runway 31 arrivals.</p> <p>The top five recorded complaint themes across all communities were:</p> <ul style="list-style-type: none"> - Runway 13 RNP (AR) arrivals (short approach from the northern runway end) - Runway 31 departures (departures to the north) - Runway 13 RNP arrivals (long approach to the northern runway end)

Description	Result
	<ul style="list-style-type: none"> - Circuit Training - Fixed Wing Aircraft - Movements Outside Tower Hours. <p>Appendix B of this report contains further details including the top ten suburbs from which complaints were received.</p>

5. Community and industry engagement

5.1 Community engagement

Community engagement for the Sunshine Coast PIR commenced with an in-person community meeting held on 19 September 2020 to discuss the PIR process and draft TOR. This meeting was attended by 25 people.

A draft TOR was released for an initial public-comment period from 2 October-1 November 2020. This period was extended to 4 November 2020 due to power/internet outages on the Sunshine Coast. A second community meeting (online) was held 8 December 2020 to discuss an updated TOR ahead of a second public-comment period from 11 December 2020-17 January 2021. This meeting was attended by 44 people.

The TOR received 460 submissions during the first public comment period and 180 submissions during the second public comment period. It was finalised in January 2021 and published on 1 February 2021.

The PIR Community Engagement Plan (CEP) was released for an initial public comment from 11 December 2020 to 17 January 2021. The public comment period was then extended to 31 January 2021 to provide the community additional time to submit feedback. The draft CEP was updated and released for a second public-comment period from 29 March-30 April 2021.

The CEP received 77 submissions during the first public-comment period and 12 during the second public-comment period. It was finalised and published on 31 May 2021.

An online meeting was also held to discuss noise modelling, monitoring and NAPs. This was conducted on 5 August 2021, attended by 15 people.

Submissions were sought from the community from 20 July-26 September 2021 on suggested improvements to NAPs. A total of 76 submissions were received.

Submissions were also sought from the community from 11 October 2021-24 December 2021 on suggested alternatives to flight paths, however submissions continued to be received and accepted through to 14 January 2022. A community meeting was held on 18 November 2021, to discuss flight path design considerations and constraints and how to make a submission. This meeting was attended by 28 people. A total of 105 submissions were received.

A community workshop was held on 15 October 2022 to discuss the suggested NAP and flight path alternatives Airservices had received. The session was attended by 29 community members.

Following this meeting, Airservices received several emails from the Valdora and surrounding community expressing concern over suggested alternatives that proposed to direct aircraft movements to the west of the airport. The suggested alternatives are only concepts for future investigation at this stage. Prior to any decision being made to implement such a suggested change, engagement will be conducted in all potentially affected communities to inform decision-making.

5.5 Industry engagement

Industry engagement commenced during the development of the TOR. This included an industry briefing at the commencement of the PIR and the opportunity to comment on the TOR as part of public-comment period.

During the review, industry have also been engaged and offered the opportunity to submit suggested improvements in parallel with the community submission program. A virtual industry meeting occurred in March 2021 and feedback was also captured from operators via direct correspondence.

Four industry stakeholder provided submissions to the PIR.

6. Community suggested flight path alternatives

Overview

The 105 submissions received on suggested flight path alternatives have been grouped into common themes and then assessed against four key elements per the TOR: safety and operational compliance, operational efficiency/feasibility, environment, and network.


The detailed assessments of the community suggested alternatives flight paths including community submissions can be found in **Appendix C**.

The following table provides a summary of community suggested alternatives and the assessment outcome for each against the four assessment elements. Suggestions that do not receive a positive assessment against Safety and Compliance have not progressed to further assessment, as this element is not negotiable.



Legend:

- ✓ *positive outcome*
- ~ *combination of positive and negative outcome*
- ✗ *negative outcome*

Community suggestion	Safety and compliance	Operational efficiency	Environmental	Network	Outcome
Reinstate previously flown flight paths	✗				The previous flight paths served a different runway orientation and cannot be used for the new runway. <i>Does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.</i>
Avoid flight paths over specific areas	✗				While Airservices seeks to avoid impacts to communities, no community can be considered exempt from aircraft operations and overflight of some communities is unavoidable to meet safety and compliance requirements. <i>Does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.</i>

Community suggestion	Safety and compliance	Operational efficiency	Environmental	Network	Outcome
No new flight paths over the hinterland	✗				<p>While Airservices seeks to avoid impacts to communities, no community can be considered exempt from aircraft operations and overflight of some communities is unavoidable to meet safety and compliance requirements.</p> <p><i>Does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.</i></p>
No change to current flight paths	✓	✓	✓	✓	<p>Current flight paths meet safety and operational requirements and have previously been assessed suitable against all other criteria.</p> <p><i>Will be included and considered against alternative community suggestions.</i></p>
Fly over the previously exposed community	✗				<p>The previous flight paths served a different runway orientation and cannot be used for the new runway.</p> <p><i>Does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.</i></p>
Over sea arrivals and departures only	✗				<p>Direction of travel, wind and other weather conditions require both runway ends to be available for use as required.</p> <p><i>Does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.</i></p>
<p>Suggestions for RWY 13 arrivals (landing from the north)</p>					
Remove RNP W to RWY 13 (RNP-AR short approach to the northern runway end)	✓	✗	✗	✗	<p>International and Australian safety regulators encourage the use of RNP-AR approaches due to the increased predictability of flights and associated safety benefits, including during poor weather. This suggestion would also shift all operations from this approach to the longer RNP Z approach further noise, increasing impacts for these communities.</p> <p><i>Will not progress for further assessment due to it not meeting regulator and industry requirements and the impacts on the community.</i></p>
Increase sharing of RNP W to RWY 13 (RNP-AR short approach) with RNP Z to RWY 13 (longer approach)	✓	✗	~	~	<p>This suggestion requires further consideration but meets safety and compliance requirements.</p> <p><i>This suggestion will progress for further assessment.</i></p>

Community suggestion	Safety and compliance	Operational efficiency	Environmental	Network	Outcome
Increased use of RNP W to RWY 13 (RNP-AR shorter approach), instead of RNP Z RWY 13 (longer approach)	x				Not all aircraft are equipped and certified to fly the RNP-AR. <i>Does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.</i>
Move the RNP W to RWY 13 (RNP-AR shorter approach) to arrive from the south of the airport over land / Maroochy River					This suggestion would require broader airspace changes and may interface with Brisbane airport traffic. <i>On hold, to be investigated in parallel with Brisbane PIR recommendation implementation.</i>
Reduce the RNP W to RWY 13 (RNP-AR shorter approach) tolerance from RNP 1.0 to RNP 0.3 - 0.1	x				Tightening RNP tolerances will not make aircraft fly more accurately, only notify them when they cannot meet the required accuracy. The system aims to be exactly on the line. <i>Does not meet Airservices' safety and operational compliance assessment and will not progress for further assessment.</i>
Adjust the RNP W to RWY 13 (RNP-AR shorter approach) arc further northwest	✓	✓	x	~	This suggestion would increase the population exposed to aircraft operations. <i>This suggestion will not progress for further assessment.</i>
Remove OLTUD (waypoint name) Initial Approach Fix (IAF) of the RNP Z to RWY 13 (longer approach)	✓	~	x	x	This suggestion would increase the population exposed to aircraft operations. <i>This suggestion will not progress for further assessment.</i>
Rotate UPLOT to BSZNI (waypoint names) segment of the RNP Z to RWY 13 (longer approach) to the west, as per the original EIS	✓	✓	x	x	This suggestion would increase the population exposed to aircraft operations. <i>This suggestion will not progress for further assessment.</i>
Rotate the RNP Z RWY 13 (longer approach) to the south, to track aircraft over cane fields and vacant land	x				The final approach segment cannot be offset for noise abatement reasons under international safety standards. Introducing a turn prior to the final approach segment would reduce safety by making the approach more challenging to fly. <i>Does not meet Airservices' safety and operational compliance assessment and will not progress for further assessment.</i>
RNP Z RWY 13 (longer approach) to only to be used by aircraft arriving from the north	x				Not all aircraft are RNP-AR equipped. Aircraft arriving from different directions may be required to arrive via the RNP Z RWY 13. <i>Does not meet Airservices' safety and operational compliance assessment and will not progress for further assessment.</i>
Create a RNP-AR approach for RWY 13 from the West					This suggestion would require broader airspace changes and may interface with Brisbane airport traffic. <i>On hold, to be investigated in parallel with Brisbane PIR recommendation implementation</i>

Community suggestion	Safety and compliance	Operational efficiency	Environmental	Network	Outcome
Suggestions for RWY 13 departures (departing in a southerly direction)					
Rotate the SID MOOLO ONE off RWY 13 to the north, to track aircraft east over the ocean	✓	~	~	✘	This suggestion would have negligible community benefit due to the minimal change in tracking closer to the coastline. It would also affect operational efficiency and flow on network impacts. <i>This suggestion will not progress for further assessment.</i>
Rotate the SID TAPET ONE from RWY 13 to the north, to track aircraft east over the ocean	✓	~	~	✘	This suggestion would have negligible community benefit due to the minimal change in tracking closer to the coastline. It would also affect operational efficiency and flow on network impacts. <i>This suggestion will not progress for further assessment.</i>
Suggestions for RWY 31 departures (departing in a northerly direction)					
Remove SID MOOLO ONE from RWY 31	✓	✘	✘	✘	This suggestion would increase the population exposed to aircraft operations. It would also affect operational efficiency and flow on network impacts. <i>This suggestion will not progress for further assessment.</i>
Increased usage of SID TAPET ONE from RWY 31, instead of SID MOOLO ONE RWY 31	✓	✘	✘	✘	This suggestion would increase the population exposed to aircraft operations. It would also affect operational efficiency and flow on network impacts. <i>This suggestion will not progress for further assessment.</i>
Move the SID MOOLO ONE from RWY 31 to turn left and track to the south of the airport over land / Maroochy River					This suggestion would require broader airspace changes and may interface with Brisbane airport traffic. <i>On hold, to be investigated in parallel with Brisbane PIR recommendation implementation.</i>

Community suggestion	Safety and compliance	Operational efficiency	Environmental	Network	Outcome
Introduce a northern turn (once coast is cleared) on the SID MOOLO ONE from RWY 31	✓	~	~	✗	This suggestion would shift noise from existing communities to others and is not consistent with the principles applied to considering flight path alternatives. <i>This suggestion will not progress for further assessment.</i>
Rotate the SID MOOLO ONE from RWY 31 to the south, to track aircraft over cane fields	✓	✓	~	~	This suggestion would reduce the population exposed to aircraft operations. <i>This suggestion will progress for further assessment.</i>
Adjust the SID MOOLO ONE from RWY 31 arc further north over Lake Weyba	✓	✓	~	~	This suggestion would reduce the population exposed to aircraft operations. <i>This suggestion will progress for further assessment.</i>
Increased usage of SID MOOLO ONE RWY 31, instead of SID TAPET ONE RWY 31	✓	~	~	✗	This suggestion would shift noise from existing communities to others and is not consistent with the principles applied to considering flight path alternatives. <i>This suggestion will not progress for further assessment.</i>
Introduce a southern turn on the SID TAPET ONE RWY 31	✓	✗	✗	✗	This suggestion would increase the population exposed to aircraft operations. It would also affect operational efficiency and flow on network impacts. <i>This suggestion will not progress for further assessment.</i>
Rotate the SID TAPET ONE RWY 31 to the south, to track aircraft over cane fields	✓	✓	~	~	This suggestion would reduce the population exposed to aircraft operations. <i>This suggestion will progress for further assessment.</i>
Create a Southwest Departure from RWY 31					This suggestion would require broader airspace changes and may interface with Brisbane airport traffic. <i>On hold, to be investigated in parallel with Brisbane PIR recommendation implementation</i>
Create a Northwest Departure for RWY 31					This suggestion would require broader airspace changes and may interface with Brisbane airport traffic. <i>On hold, to be investigated in parallel with Brisbane PIR recommendation implementation</i>

7. Community suggested noise abatement procedure improvements

Overview

The 76 submissions received on suggested NAP improvements have been assessed and consolidated into 10 suggested improvements, as per their likely noise benefit to the community.

Several suggestions received related to the use of alternative flight paths, which have been captured in the themes in the community suggested alternative flight paths in **Appendix C**.

The detailed assessments of the community suggested alternative NAPs including community submissions can be found in **Appendix D**.

The following table provides a summary of all the community suggested alternative themes with the assessment outcome.

Community suggestion	Outcome
Implement curfew	This is not within Airservices remit and cannot be considered as a possible noise improvement through the PIR. <i>This cannot be progressed through the PIR.</i>
Reverse the current preferred runways	The change to current preferred runways would provide a noise benefit to communities to the east/south of the airport but would increase impacts on those to the west/north, noting communities to the east/south are much closer and more densely populated to the west/north. As a result, this could reduce the number of people affected, but would shift noise impacts from one community to another, which is not consistent with the principles applied to considering noise abatement. Review of preferred runway use to be progressed.
No change to current preferred runways	This is a feasible outcome of the review, however, will not result in changes to current noise experience. Review of preferred runway use to be progressed.
Steeper departures	The current climb gradient was introduced through consultation with industry and community. Increasing the climb gradient may lead to an increase in circumstances where an operator cannot accept a departure via the SID. <i>This suggestion will not progress for further assessment.</i>
Steeper arrivals	The suggestion to keep flights higher on arrival, by increasing the standard 3-degree glide path angle of descent, is not recommended due to the reduction in safety. <i>This suggestion will not progress for further assessment.</i>
No intersection departures	A NAP is already in place to restrict intersection departures. Trials conducted at Brisbane Airport restricting the use of intersection departures have found that this action results in a noise change in the order of one decibel (in either direction). This level of noise is not considered an audible change in accepted acoustic standards. <i>This suggestion will not progress for further assessment.</i>
Restriction on pilot training (circuit hours, specific training activities)	The suggestion to place restrictions on pilot training operations (circuit hours, specific training activities) is not able to be progressed through the PIR, as this decision is not within Airservices remit. However, Airservices and SCA regularly meet with training operators and will seek to identify any alternatives to lessen the impact of these operations on the community. <i>This suggestion will not progress for further assessment.</i> Action: Discuss further with SCA.

Community suggestion	Outcome
Specific helicopter arrival and departure channels, avoiding residential areas	<p>The suggestion to introduce specific helicopter arrival and departure channels will not progress due to operational/safety concerns over channelling all helicopter operations to a common point. It would also have the effect of concentrating helicopter operations over communities, whereas these operations are currently shared. However, Airservices and SCA regularly meet with training operators and will seek to identify any alternatives to lessen the impact of these operations on the community.</p> <p><i>This suggestion will not progress for further assessment.</i></p> <p>Action: Discuss further with SCA.</p>
Remove 5700KG weight limitation on current NAPs	<p>The suggestion to remove the current weight limitation on the preferred flight path NAP is not recommended to progress, as aircraft below 5700kg are generally operating under VFR conditions and are not required to follow IFR flight paths, and so this would have limited impact on the community's experience of passenger aircraft operations.</p> <p>The NAP concerning operations between 2300 and 0530 hours is outside of Airservices remit. This can be discussed further with Sunshine Coast Airport.</p> <p><i>This suggestion will not progress for further assessment.</i></p> <p>Action: discuss further with SCA.</p>
Monitor NAP adherence	<p>Monitoring of NAP adherence can provide the opportunity to identify and address any recurring instances of the NAPs not being applied and may boost learnings and ongoing improvement opportunities. Airservices is currently investigating ways to expand our Aircraft in Your Neighbourhood website to include, where possible, NAP adherence reporting.</p> <p><i>This suggestion will proceed to further investigation.</i></p>

8. Industry suggested improvements

Overview

Airservices sought feedback from industry throughout the PIR. Six industry suggested flight path improvements and one NAP suggested improvement have been assessed using the same criteria that was applied to the community suggested alternatives.

The review of the industry suggested alternatives can be found in **Appendix E**.

Flight path suggested improvements

A summary of the flight path suggested improvements and the assessment outcome is shown in the following table.

Industry suggestion	Safety and compliance	Operational efficiency	Environmental	Network	Outcome
Review the track distances of the SIDs and STARs.	✓	✓	✓	✓	<p>Track miles were kept to a minimum during the design process but are noted as being greater than those that were in place for the now decommissioned runway, 18/36.</p> <p><i>Any changes made during the PIR will consider this feedback and make improvements wherever possible,</i></p>

Industry suggestion	Safety and compliance	Operational efficiency	Environmental	Network	Outcome
					consistent with the Flight Path Design Principles.
Reduce the track distances associated with RWY13 RNP approaches.	x				Due to separation with the RWY13 TAPET SID, and the need to minimise the impact on communities, the current design is considered the optimal outcome. <i>This suggestion will not proceed for further investigation.</i>
Reduce the ITIDE TWO ZULU ARRIVAL RWY 31 heading change for aircraft arriving from the South. The aircraft FMS will schedule the turn to commence approximately 5nm to run ITIDE	✓	✓	✓	~	This turn is within air traffic and operational management parameters. An optional enhancement to be explored further is to add a wider waypoint prior to ITIDE, reducing the change in heading at ITIDE, and reducing turn distance. This suggested change would occur over water. <i>This suggestion will proceed for further investigation.</i>
Amend the location of waypoint NAVTO on the TAPET ONE DEPARTURE to be within RNP navigation requirements.	✓	✓	✓	~	A re-design of this section of the SID may improve the turn for the onboard aircraft FMS. This suggested change would occur over water. <i>This suggestion will proceed for further investigation.</i>
Realign airspace extending into the Mary River Valley (Kybong Airfield) to allow greater use of the airspace by other aviation users.	✓	~	✓	~	Airservices will investigate actual arrival altitudes of aircraft on the current SEBVA STAR (which must be contained 500ft above controlled airspace) to see if an increase to the airspace area over Kybong Airfield is possible. <i>This suggestion will proceed to further investigation.</i>
Realign the northwest airspace boundary further northeast for easier visual reference of the line from Gympie to Maroochydore.	x				Airspace to the north-west of the airport is the minimum required to contain current Instrument Flight Procedures. There is no airspace that can be removed/released without significant changes to these procedures. Airspace infringements have been reviewed and are currently consistent with pre-new runway levels. <i>This suggestion will not proceed to further investigation.</i>

NAP improvements

A summary of the NAP suggested improvement and the assessment outcome is shown in the following table.

Industry suggestion	Outcome
Amend the NAP 2 (preferred flight paths for aircraft above 5700kg) to exclude Runway 31 visual tracking to a final approach.	Visual procedures were not included in the Sunshine Coast design to ensure predictability with aircraft flying on published flight paths and noise abatement. However, this segment relates in part to overwater operations. There could potentially be a benefit in terms of reduced thrust settings, which would improve noise outcomes, as well as operations. <i>This suggestion will proceed to further investigation.</i>

9. Airservices suggested improvements

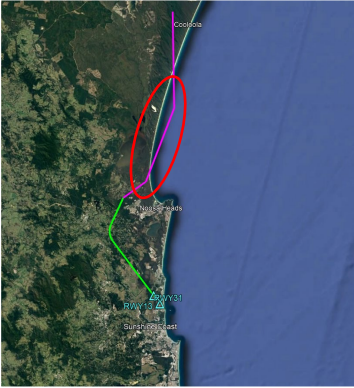

Overview

Airservices’ suggested improvements for the Sunshine Coast flight paths and airspace were determined against three key factors for this PIR:

- ATC feedback
- *Sunshine Coast Operational Effectiveness* review (completed in late 2021)
- Airservices’ assessment of community feedback on noise issues and subsequent flight path design review.

A number of minor administrative-type changes resulted from this review, and these have been implemented where they do not impact aircraft operations. This included, for example, changes to radio frequency procedures and changes to final approach clearance instructions.

The following table summarises findings that may provide a noise improvement for the community, as well as operational improvements. As is the case with all submissions progressed from this PIR, these suggested improvements will be subject to community engagement once designed and more fully assessed.

Title	Description	Assessment
<p>Amend the RWY 13 and 31 STAR - REBEG TWO ZULU ARRIVAL (RNAV), arrival from the north, to avoid Teewah Beach</p>	<p>Current RWY 13 tracking from the REBEG waypoint to the north of the airport is predominately over uninhabited land along the coast between Noosa North Shore and Great Sandy National Park. Offsetting the track approximately 2.5km east may be possible, potentially avoiding the currently overflowed community at Teewah Beach.</p>	<p>Further investigation is necessary to assess compatibility with the existing initial approach fix UPLOT (between Cooroibah and Tewantin). Subject to community engagement.</p> <p>This suggestion will progress for further assessment.</p> 
<p>Position the RWY 13 – RNP W (AR) APPROACH (shorter approach) equally between Marcus Beach and Castaways Beach</p>	<p>Current RWY 13 RNP-AR approach begins at waypoint OMDUN (green). The approach can be adjusted to the South by 320m to begin at waypoint BSX01 (red). This would provide an equidistant split of ~275m/15NM between the residential areas of Castaways Beach to the south and Marcus Beach to the north, providing more equitable noise sharing.</p>	<p>Further design required to confirm no flow-on effect to procedures prior to or after the location of this proposed change. Subject to community engagement.</p> <p>This suggestion will progress for further assessment.</p> 
<p>Additional</p>	<p>A requirement for an additional VOR/DME procedure (for training aircraft) has been</p>	<p>Requires design and further assessment, including community engagement.</p>

Title	Description	Assessment
VOR/DME non-precision approach procedure(s)	identified. Initial concept would involve aligning with existing procedures to avoid impacts to new communities, however design options need to be developed for assessment and community engagement.	This suggestion will progress for further assessment.
NAP - preferred runway use	Identifying a preferred runway for use at Sunshine Coast Airport can have the effect of concentrating noise impacts on one community to the benefit of another. The intent of this NAP, when developed, was to make use of over-water arrivals and departures as much as possible, however it is recognised that the community of Mudjimba is located between the runway and water.	Further investigate the need for a preferred runway NAP and consider application of runway selection based on meteorological and traffic conditions. This suggestion will progress for further assessment.

10. PIR Recommendations

The following recommendations have been identified as a result of assessment of all suggestions from the community and industry, as well as from Airservices review of operations and opportunities to improve noise outcomes.

Recommendation 1: Improved information on aviation roles and responsibilities

- Aviation roles and responsibilities to be shared with the Sunshine Coast community (and other communities across Australia) to assist in clarifying which agencies and bodies are responsible for the various elements of aviation management.

Recommendation 2: Investigate feasible flight path change suggestions

- Shift the initial departure path from runway 31 slightly west to track aircraft over cane fields prior to resumption of current tracking to the MOOLO and TAPET SIDs
- Shift the MOOLO SID departure path from runway 31 further north over Lake Weyba
- Shift the runway 13 and 31 REBEG STAR from the north further east over water to avoid Teewah Beach
- Shift the runway 13 RNP-AR short approach slightly south to be equidistant between Marcus Beach and Castaways Beach
- Consider an additional VOR/DME non-precision approach procedure to better facilitate training operations to the new runway
- Reduce the heading change on the runway 31 ITIDE STAR for aircraft arriving from the south
- Relocate waypoint NAVTO on the TAPET SID to achieve RNP navigation requirements
- Review the airspace extending into the Mary River Valley (Kybong Airfield) to allow greater use of the airspace by other aviation users
- No change to current flight paths (include and consider against alternative suggestions)
- Consider opportunities to reduce track miles for industry as part of investigating any flight path changes.

Recommendation 3: Investigate feasible NAP improvements

- Investigate increased sharing between runway 13 RNP-AR short approach with RNP long approach
- Investigate measure to improve adherence to the TAPET SID departure procedure

- Conduct further community engagement into the need for a preferred runway use NAP
- Investigate expanding Aircraft in Your Neighbourhood to include NAP adherence reporting
- Investigate excluding visual tracking to runway 31 (over water) from NAP 2 (*Preferred flight paths for aircraft above 5700kg*)

Recommendation 4: Investigate in parallel with Brisbane Noise Action Plan implementation, potentially feasible flight path suggestions that interface with Brisbane operations

- Shift the runway 13 RNP-AR (short approach) from the south, to track to the west of the airport over land/Maroochy River to avoid crossing coastal communities
- Turn the runway 31 MOOLO SID to the left to track to the west of the airport over land/Maroochy River to avoid crossing coastal communities
- Introduce an RNP-AR short approach to runway 13 from the west
- Introduce a south-west SID departure path from runway 31
- Introduce a north-west SID departure path from runway 31.

11. Next steps

The recommendations from this PIR will be implemented through Airservices' flight path change processes. This involves a series of stages, depending on the complexity of the change, such as:

- Design – including a safety assessment, simulation, and community and industry engagement.
- Environmental assessment to confirm any impacts, the nature of these impacts and if referral to the Federal Minister for the Environment is required, due to the significance of any impacts.
- Community engagement to seek input to the detailed proposed change or change options.
- Final design to respond to community feedback.
- Regulatory approvals as required.
- Publishing of the new flight path or procedure ahead of implementation.
- Community information to ensure awareness of the implementation of the new flight paths/procedure.

A CEP will be developed to support delivery of the PIR recommendations. This will include ongoing information updates and engagement on proposed changes as they are designed and assessed. This plan will be informed by feedback gathered during the PIR and will be shared with the community for comment ahead of finalising.

The flight path changes that are recommended to progress for further assessment as a result of this PIR are subject to this same process, prior to a decision on implementation being made. This will include community engagement in all potentially affected communities.

APPENDIX A – SUMMARY OF PIR OBJECTIVES AND SCOPE

PIR objectives

1. Review the forecast noise levels in the Airservices TEIA against actual aircraft movement data and noise levels post-implementation and provide updated information to the community.
2. Review the effectiveness of the Sunshine Coast Airport NAPs and identify any potential improvements.
3. Identify opportunities to minimise the impact of aircraft operations on the community, including investigation of community suggested alternatives, and consider these against Airservices Flight Path Design Principles.
4. Seek and consider feedback from industry: airport, airlines, general aviation operators and industry associations, to identify opportunities for potential improvement to operational and network efficiency and consider these against Airservices Flight Path Design Principles.
5. Engage genuinely with the community to provide opportunities to influence the outcomes of the PIR in accordance with Airservices Community Engagement Framework.

PIR scope

The following actions were agreed-upon to be delivered as part of the PIR scope:

Noise monitoring and modelling

- Short-term noise monitoring program to provide actual aircraft noise information to compare to modelling assumptions and TEIA findings. Noise monitoring locations were identified in consultation with the community.
- Modelling of current noise impacts based on actual movement data, including aircraft type, altitude, terrain and operating conditions, to provide information on noise levels to locations not fitted with a short-term noise monitor.
- Desktop noise modelling comparing actual operations against modelled/forecast operations, including updated assumptions based on the closure of Runway 18/36.

Operations review

- A review of scheduled Instrument Flight Rules (IFR) operations (i.e., passenger aircraft operations) compliance with published approach and departure procedure designs including:
 - flight path track compliance
 - NAPs (during tower hours)
 - Industry feedback.
- A review of ATC traffic management (noting reduced aircraft movement volume during COVID-19 impacted period from June 2020-March 2021) including application of NAPs and management of general aviation operations (including IFR and VFR operations).
- A review of the extent to which NAPs can be enhanced, based on level of compliance and feedback from the community, industry and ATC.
- A review of Airservices' noise complaint data, investigations, summary and analysis related to Sunshine Coast Airport operations.
- A review – in consultation with airlines, industry representative bodies, Sunshine Coast Airport and general aviation operators – of the operational efficiency, performance and flyability of flight paths, air traffic management practices inside controlled airspace, NAPs and the effects of the changes on overall network efficiency.

- Consideration of opportunities identified by ATC and/or industry to enhance the operational efficiency and performance of flight paths, air traffic management procedures and overall network efficiency, using the Flight Path Design Principles.
- Updated analysis of aircraft movement details based on actual aircraft operation, including tracking, altitude, NAPs adherence and compliance.

Community suggested alternatives

- Consideration of community-suggested noise alternatives submitted during the pre-implementation engagement period (2019) and during this PIR (responding to recommendation 2a in the ANO report).

Community information

- A review of EIA community information against actual noise outcomes.
- A review of Airservices' community information, including fact sheets and web content, on expected aviation operations – including identifying potential improvements to explain Airservices' roles and responsibilities for air traffic management.
- Engagement with the community on noise impacts and information.

Out-of-scope

The following were not part of the scope of the PIR:

- VFR operations outside controlled airspace (including outside tower hours).
- High-level route structure review (high-altitude flight paths that connect various airports across the country).
- Changes to airspace for which Airservices is not the arbitrator (e.g., Amberley military airspace, Danger Area D-629 - flight training areas).
- Changes to Brisbane Airport airspace – however, the outcomes of the Brisbane PIR and this Sunshine Coast PIR will be considered in parallel to identify opportunities for enhancements across both airspaces.
- Assessment of ambient noise.
- Airport hours of operation.
- Review of the 2014 EIS prepared by Sunshine Coast Council.

Please note: Airservices has no regulatory enforcement function in relation to aircraft operations.

APPENDIX B – DETAILED FINDINGS

The following key findings resulted from Airservices' PIR review of items noted in the TOR Objectives and Areas of Focus.

1. Consideration of community suggested noise alternatives submitted in 2019 and during the PIR

See Appendix C.

2. Modelling of current noise impacts based on actual movement data

Airservices completed a Noise Modelling Review in July 2021 to provide the community with information on noise levels based on actual operations. The outcomes of this review were shared through a [Noise Modelling Review report](#) and discussed at an online community meeting held in August 2021.

The aim of this modelling of actual noise levels was to provide the community with updated noise information prior to noise monitoring activity commencing as part of the PIR. The detailed results which include a series of noise contours, as well as the data used to create these, can be viewed in the report above.

3. Review of forecast noise levels in the TEIA against actual noise levels

Noise monitor location selection process

Several short-term noise monitors were put in place to capture actual noise data.

The noise monitor data collection period for this PIR was 1 October 2021 to 5 April 2022 (Mudjimba, Yandina, Eumundi) and 11 April to 30 August 2022 (Weyba Downs and Castaways Beach).

To support selection of appropriate monitoring sites, a [short-term noise monitoring site feasibility study](#) was completed and published on 31 May 2021. This identified five "zones" in which the placement of short-term noise monitors was considered appropriate due to the proximity the new flight paths and the locations used for modelled noise levels in the TEIA.

The community was asked to identify appropriate private properties within or close to the identified zones through an expression of interest available through to 25 June 2021. A total of 44 expressions of interest were received.

On 30 September 2021, three short-term noise monitors commenced operation at Yandina Creek, Eumundi/Cooroy Mountain, and Mudjimba. On completion of the noise monitoring at those locations, two of the noise monitors were installed at Weyba Downs and Castaways Beach. Information was made available on Airservices [WebTrak](#) website.

Why are there differences between modelled and actual noise?

Noise modelling provides a forecast and information of potential noise levels based on the best available information and noise modelling methodology at the time. As a result, it cannot always predict every future operational eventuality.

Noise contours are also not hard boundaries and areas outside a contour may experience events similar to the adjoining contour, due to variability in flight path tracking by aircraft, seasonal influences and a range of other factors.

The 2019 TEIA had to make assumptions about the expected average single event L_{Amax} noise levels for typical aircraft types based on expected flight paths and aircraft performance parameters. For the B738 and A320 aircraft, single event L_{Amax} levels at some locations were predicted to be, on average, just below 60 dB (A). Actual noise monitor data shows that, due to factors such as weather, thrust setting, height difference to the noise monitor, the range of observed single event L_{Amax} values for these aircraft was between 54 to 73 dB (A).

The single event L_{Amax} noise contours for common aircraft types B738, A320 and A321 (arrivals and departures) were also generated for reference, based on the actual noise levels that have been captured as part of the noise monitoring.³ The aircraft types and traffic levels data used in the noise modelling were captured from the Noise and Flight Path Monitoring System (NFPMS). To provide a direct comparison, N60 and N70 events captured through noise monitoring are presented.

MUDJIMBA COMPARISON

	2019 TEIA	Measured Noise Events ²
Design Stage	Detailed Design	Actuals
Data Source	2019 TEIA	NMT
Scenario	2020 Opening Year	01/10/2021 to 05/04/2022
Number of events above 70dB(A)/ day	≥ 50	31.9
Number of events above 60dB(A)/ day	≥ 50	45.5

Note 1: Based on the busy week data (a week or above average aircraft movements).

Note 2: Based on the average L_{Amax} movements per day over the monitoring period.

Is there a difference?

Actual noise results are consistent with the 2019 TEIA modelled forecast for the N60 events. The N70 events from the actual noise results appear to be lower than those modelled, which means that the noise modelling was conservative at this location.

YANDINA COMPARISON

	2019 TEIA	Measured Noise Events ²
Design Stage	Detailed Design	Actuals
Data Source	2019 TEIA	NMT
Scenario	2020 Opening Year	01/10/2021 to 05/04/2022
Number of events above 70dB(A)/ day	7 to 9	9.1
Number of events above 60dB(A)/ day	17 to 19	15.4

Note 1: Based on the busy week data (a week or above average aircraft movements).

Note 2: Based on the average L_{Amax} movements per day over the monitoring period.

Is there a difference?

Actual noise results are consistent with the 2019 TEIA modelled forecast for both the N70 and N60 events with the noise modelling being slightly conservative for the N60 events.

³ L_{Amax} is a noise metric that shows the maximum noise level of a single noise event associated with a particular flight path. The L_{Amax} noise metric is useful for determining the potential noise change associated with geographical movement of a flight path.

EUMUNDI COMPARISON

	2019 TEIA	Measured Noise Events ²
Design Stage	Detailed Design	Actuals
Data Source	2019 TEIA	NMT
Scenario	2020 Opening Year	01/10/2021 to 05/04/2022
Number of events above 70dB(A)/ day	0	0.2
Number of events above 60dB(A)/ day	1 to 2	5.0

Note 1: Based on the busy week data (a week or above average aircraft movements).

Note 2: Based on the average L_{Amax} movements per day over the monitoring period.

Is there a difference?

Actual noise results are consistent with the modelled forecast for the N70 events. There is a difference with regards to the N60 events, with up to 2 in the 2019 TEIA and up to 5 for the NMT actual events. This is most likely attributable to the following:

- The aircraft types modelled flying over this NMT. For example, the NMT noise results show that the SF34 is the second most common aircraft captured at the Eumundi NMT after the B738. The 2019 TEIA did not include this aircraft type with the main aircraft modelled being the A320, B712, B738 and F70 based on 2017-2018 movement data. Link Airways introduced the SF34 aircraft operations in July 2018 and currently have operations to and from Theodore Airport that fly directly over the Eumundi NMT location.

For the captured actual events during the noise monitoring period, 79 per cent of the 112 SF34 movements were above 60 dBA.

- The 2019 TEIA noise modelling for the 2020 Opening Year scenario included General Aviation (GA) activities that were assigned to the existing runway (18/36). However, the GA activities now utilise runway (13/31) alongside the passenger aircraft movements. As a result, more GA activities are expected to be captured by the NMTs as evidenced by the actual noise events.

WEYBA DOWNS COMPARISON

	2019 TEIA	Measured Noise Events ²
Design Stage	Detailed Design	Actuals
Data Source	2019 TEIA	NMT
Scenario	2020 Opening Year	11/04/2022 to 30/08/2022
Number of events above 70dB(A)/ day	0	0.2
Number of events above 60dB(A)/ day	1 to 3	10.0

Note 1: Based on the busy week data (a week or above average aircraft movements).

Note 2: Based on the average L_{Amax} movements per day over the monitoring period.

Is there a difference?

Actual noise results are consistent with the modelled forecast for the N70 events. There is a difference with regards to the N60 events, with up to 3 in the 2019 TEIA and up to 10 movements for the NMT actuals. This is most likely attributable to the following:

- A review of the 2019 TEIA single event noise contours for the B738 and A320 shows that the Weyba Downs NMT location falls just outside the 60 dBA noise contours. However, the actual

noise results for these two aircraft have an average L_{Amax} just above 60 dBA. This could be a result of any number of factors, including meteorological conditions, thrust settings, height and slant distances relative to the NMTs.

- The 2019 TEIA noise modelling for the 2020 Opening Year scenario included GA activities that were assigned to the existing runway (18/36). However, the GA activities now utilise runway (13/31) alongside the passenger aircraft movements. As a result, more GA activities are expected to be captured by the NMTs as evidenced by the actual noise events.

CASTAWAYS BEACH COMPARISON

	2019 TEIA	Measured Noise Events ²
Design Stage	Detailed Design	Actuals
Data Source	2019 TEIA	NMT
Scenario	2020 Opening Year	11/04/2022 to 30/08/2022
Number of events above 70dB(A)/ day	0	0.8
Number of events above 60dB(A)/ day	1 to 2	9.6

Note 1: Based on the busy week data (a week or above average aircraft movements).

Note 2: Based on the average L_{Amax} movements per day over the monitoring period.

Is there a difference?

Actual noise results are consistent with the modelled forecast for the N70 events. There is a difference with regards to the N60 events, with up to 2 in the 2019 TEIA and up 9.6 movements for the NMT actuals. This is most likely attributable to the following

- A review of the 2019 TEIA single event noise contours for the B738 and A320 shows that the Castaways Beach NMT location falls just outside the 60 dBA noise contours. However, the actual noise results for these two aircraft have an average L_{Amax} just above 60 dBA. The actual noise measurements also captured a few B738s, A320s and A321s with an L_{Amax} just above 70 dBA, hence the measured N70 of 0.8. This could be a result of any number of factors, including meteorological conditions, thrust settings, height, and slant distances relative to the NMTs.
- The 2019 TEIA noise modelling for the 2020 Opening Year scenario included GA activities that were assigned to the existing runway (18/36). However, the GA activities now utilise runway (13/31) alongside the passenger aircraft movements. As a result, more GA activities are expected to be captured by the NMTs as evidenced by the actual noise events.

4. Review of scheduled Instrument Flight Rules (IFR) operations compliance

Analysis into how closely aircraft were following the published SIDs and STAR flight paths for Sunshine Coast Airport indicates an adherence rate of 77 per cent and 81 per cent respectively since July 2020. This means that about 7 to 8 out of 10 aircraft were flying the published procedures with minimal horizontal deviation based on agreed tolerances.

The adherence rate for 2022 only (January – October) was notably higher, on average 86 per cent of flights adhered to the paths for SIDs and 88 per cent to the STARs. The first month's post runway opening was likely a transition period in terms of operators and Air Traffic Control adopting the SIDs and STARs and 2021 experienced some disruption to industry due to COVID-19, all likely contributing to lower adherence rates.

A preliminary review into the drivers for non-adherence to the SIDs based on October 2022 data indicates that flights associated with the SID TAPET 1 procedure departing from both runways have notably lower compliance rates than flights associated with the SID MOOLO 1 procedure. However,

SID TAPET 1 departures were only accounting for 7 per cent of all flights in October, while SID MOOLO 1 departures accounted for 93 per cent of flights.

In terms of STAR adherence, STAR ITIDE to runway 13 was the most flown procedure and had a compliance rate of 91 per cent in October 2022. Lower adherence rates were seen in procedures flown very infrequently, in particular STAR SEBVA to runway 31 (about 45 per cent adherence rate).

It should be noted that when analysing the waypoints making up the STAR procedures, aircraft were consistently tracking with greater accuracy (e.g., 90 per cent adherence to waypoints) the closer aircraft got to the aerodrome (and therefore more likely over communities).

5. Review ATC traffic management including application of NAPs and management of GA operations

Sunshine Coast ATC applies the NAPS and the Airport's Fly Neighbourly Agreements (FNA) for fixed wing aircraft and helicopters. The application of the NAPS and FNA can be constrained by operational requirements and meteorological conditions.

NAP 1 – Preferred runways for jet aircraft

The preferred runway for jet aircraft operating to and from Sunshine Coast Airport is:

- Landing: Runway 31
- Departures: Runway 13

The intent of this NAP is to encourage take-offs and landings over the ocean, where possible.

A runway can be used in two directions. Weather, in particular wind speed and direction, is usually the main reason for selecting a particular runway end. The runway end in use determines the direction that aircraft take-off and land and the flight paths that are used.

During tower hours, the runway is selected by air traffic control, in line with conditions outlined in the Manual of Air Traffic Services, and with consideration of the NAPS. Outside of air traffic control tower hours, the runway is selected by the pilot in command, with consideration of the NAPS.

Runway 13/31 can be used in two modes which is dependent on wind conditions:

- when the wind is a 'sea breeze' (wind blowing from the south/south-east), aircraft would use runway 13 to arrive overland from the north and depart over the ocean to the south.
- when the wind is blowing from the north/north-west, aircraft would use runway 31 to arrive over the ocean from the south and depart over land to the north.

The preferred runway use mode, aims to have aircraft arriving and departing to and from the south over the ocean. This is only possible during low wind conditions (less than 5 knot tailwind) and at low traffic volumes. At other times, both runway ends are used to maintain safe operations.

A total of 51 per cent of all aircraft have used the NAP preferred runways (runway 31 for arrivals and runway 13 for departures).

NAP 2 – Preferred flight paths for aircraft > 5,700kg

The intent of this NAP is to ensure larger aircraft types follow Standard Instrument Departure (SID) and Standard Terminal Arrival Route (STAR) procedures to minimise noise spread and therefore the environmental impact of aircraft operations on the community.

Analysis into how closely aircraft were following the published SIDs and STAR flight paths for Sunshine Coast Airport indicates an adherence rate of 77 per cent for SIDs and 81 per cent for STARs since July 2020. This means that about 7 to 8 out of 10 aircraft were flying the published procedures with minimal horizontal deviation based on agreed tolerances.

The adherence rate for 2022 only (January – October) was notably higher, on average 86 per cent of flights adhered to the paths for SIDs and 88 per cent to the STARs.

The first month's post runway opening was likely a transition period in terms of operators and Air Traffic Control adopting the SIDs and STARs, and likely contributed to earlier lower adherence rates.

A preliminary review into the drivers for non-adherence to the SIDs based on October 2022 data indicates that flights associated with the SID TAPET 1 procedure departing from both runways have notably lower compliance rates than flights associated with the SID MOOLO 1 procedure. However, SID TAPET 1 departures only account for 7 per cent of all flights in October 2022, while SID MOOLO 1 departures accounted for 93 per cent of flights.

In terms of STAR adherence, STAR ITIDE to runway 13 was the most flown procedure and had a compliance rate of 91 per cent in October 2022. Lower adherence rates were seen in procedures flown very infrequently, in particular, the STAR SEBVA to runway 31 (about 45 per cent adherence rate). It should be noted that when analysing the waypoints making up the STAR procedures, aircraft were consistently tracking with greater accuracy (e.g., 90 per cent adherence to waypoints) the closer aircraft got to the aerodrome.

NAP 3 – Training flight approval and booking system

Analysis of this NAP was not in scope for this PIR as there are no data measures available to Airservices associated with the compliance with this NAP.

A booking system and process for Air Traffic Control notification has been implemented and is in use at Sunshine Coast Airport.

NAP 4 – Other restrictions

Analysis for NAP 4.1 – prior approval to operate outside of tower hours – was limited as Sunshine Coast Airport is the key coordination and authorisation point for this NAP. A summary of monthly approvals to operate outside of tower hours (“overnight operations”) can be found on the Sunshine Coast Airport webpage: [Overnight Operations | Sunshine Coast Airport](#).

Sunshine Coast Airport does not have ground radar infrastructure in place to monitor and record data on ground movements. As such, a review of the compliance with NAP 4.2 – intersection departure from taxiway A2 – was out of scope for this PIR.

Airservices was able to model NAP 4.3 – departing jet aircraft to use a 7 per cent climb gradient to 6,000 feet (ft). The intent of the NAP is to manage noise impact by discouraging departing aircraft from remaining at lower altitudes unnecessarily. Most jet and larger turboprop aircraft will climb at a higher per cent climb rate as standard operating procedure.

Data collected since runway opening in 2020 indicates that 99 per cent of jet departures adhere to the prescribed climb gradient. The current climb gradient was introduced through consultation with industry and community.

6. Review extent to which NAPs can be enhanced based on level of compliance

Based on the findings noted above, opportunities to enhance NAP compliance were identified in relation to the SID TAPET ONE departure procedure, noting per above that this departure procedure accounts for only 7 percent of all departure movements.

Airservices will conduct further investigation into options to improve compliance with this NAP.

7. Identify opportunities to minimise impacts on communities

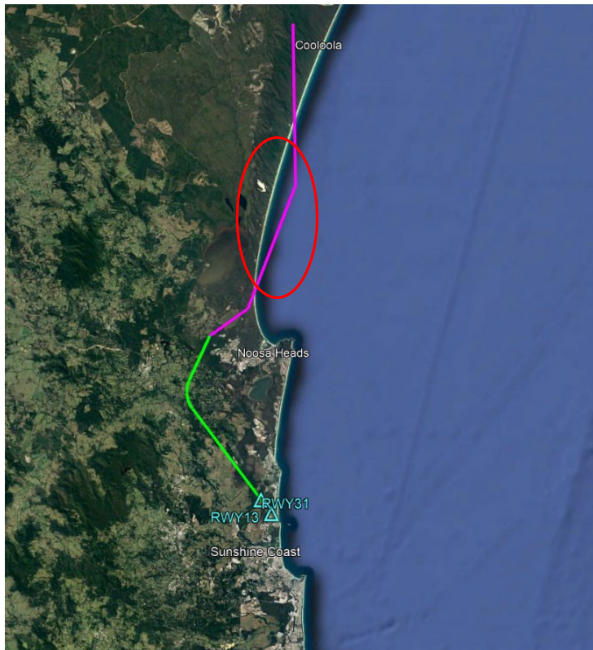
Airservices review included consideration of opportunities to improve noise outcomes for the community. This review included consideration of:

- Feedback received through the NCIS complaints database
- Feedback received at PIR community meetings
- Review of operations data gathered through the course of the PIR
- Review of flight path location and populations overflown.

Airservices has identified four feasible options to reduce noise impacts on communities. These will proceed to further design, environmental assessment and community engagement.

Amend the RWY 13 and 31 STAR - REBEG TWO ZULU ARRIVAL (RNAV), arrival from the north, to avoid Teewah Beach

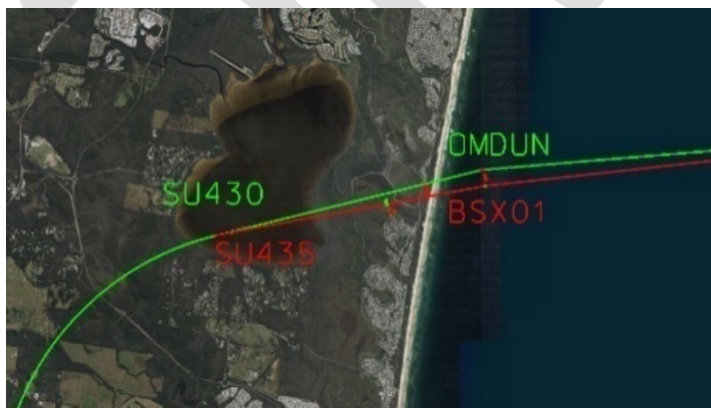
Current runway 13 tracking from the REBEG waypoint to the north of the airport is predominately over uninhabited land along the coast between Noosa North Shore and Great Sandy National Park. Offsetting the track approximately 2.5km east may be possible, potentially avoiding the currently overflowed community at Teewah Beach.



Further investigation is necessary to assess compatibility with the existing initial approach fix UPLOT (between Cooroibah and Tewantin). Subject to community engagement

Position the RWY 13 – RNP W (AR) APPROACH (shorter approach) equally between Marcus Beach and Castaways Beach

Current RWY 13 RNP-AR approach begins at waypoint OMDUN (green). The approach can be adjusted to the South by 320m to begin at waypoint BSX01 (red). This would provide an equidistant split of ~275m/15NM between the residential areas of Castaways Beach to the south and Marcus Beach to the north, providing more equitable noise sharing.



Further design required to confirm no flow- on effect to procedures prior to or after the location of this proposed change. Subject to community engagement.

Additional VOR/DME non-precision approach procedure(s)

A requirement for an additional VOR/DME procedure (for training aircraft) has been identified. The initial concept would involve aligning with existing procedures to avoid impacts to new communities, however design options need to be developed for assessment and community engagement.

Requires design and further assessment, including community engagement.

NAP - preferred runway use

Feedback was received during PIR engagement noting both support for the existing preferred runway use (PRU) NAP and a suggestion to change its direction. The existing PRU aims to have aircraft travel over water to the south of the airport rather than over land to the north. This affects the Mudjimba community which is located immediately between the runway end and the coastline. Changing PRU direction would affect less population and would have aircraft, in most cases, at a higher altitude, thus resulting in lower noise impacts than are currently experienced by the Mudjimba community. However, these communities are generally located further from the airport and may not be supportive of greater aircraft operations.

Identifying a PRU has the effect of concentrating noise impacts on one community to the benefit of another. It may be more equitable and result in enhanced noise sharing opportunities to remove the PRU NAP and have runway preference determined by weather factors and direction of aircraft travel.

Further investigation is required in consultation with the community.

8. Review community information and potential improvements to explain Airservices role and responsibility

Since the implementation of the new flight paths at the Sunshine Coast, Airservices has developed new, contemporary community engagement procedures, including a [Community Engagement Framework](#), published in 2021, which provides a number of commitments to the community in relation to engagement and outlines the approach to this engagement.

Importantly, Airservices now engages earlier with communities on proposed changes, seeks to clearly identify the nature and extent of potential impacts from these changes, and conducts assurance against all engagement to identify if all potentially impacted communities have been given adequate opportunity to participate in the engagement program.

[Flight Path Design Principles](#) (FPDP) were published in 2020 following national engagement. These Principles seek to achieve a balance between often-competing priorities during flight path design (efficiency, community impact, operational complexity, emissions), having given regard to safety as the highest priority.

Airservices has since updated how environmental assessment outcomes are applied to community engagement, now using a “noticeability” measure to determine engagement requirements, rather than a higher “significance” level prescribed in project approval requirements. This includes recognition of lower ambient noise communities and the fact that any change in aircraft operations may be noticeable regardless of the resulting noise level.

As part of the Brisbane Airport New Parallel Runway Flight Paths PIR, a document detailing the roles and responsibilities of all aviation bodies was published. This information can be shared more broadly across all airspace and flight path change locations to confirm accountability for the various aspects of aviation management.

9. Seek industry feedback on the operational efficiency, performance and flyability of the flight paths and the effects of the change on overall network efficiency

See Appendix E.

10. Consideration of opportunities identified by ATC and industry to enhance operational efficiency and performance

A number of minor administrative-type changes were identified and implemented during the review, based on operator and airline feedback. These changes were primarily to improve communication between air traffic control and aircraft or to reduce operational complexity. These changes did not affect where aircraft fly or how they operate. Examples include changes to radio frequency procedures and changes to final approach clearance instructions.

11. Compare actual operations against modelled forecasts including consideration of the effect of closure of runway 18/36

Actual operations between October 2021 and September 2022 were compared to modelled assumptions reflected in the 2019 TEIA.

Two key areas in which the assumptions were found to differ from actual operations were:

- the TEIA assumed GA aircraft would use both the existing runway, 18/36, and the new runway, 13/31. Runway 18/36 was decommissioned at the time of opening of the new runway, making it unavailable for use by any aircraft. As a result, all aircraft use runway 13/31, including GA operations.
- In 2018, SAAB SF34 aircraft were introduced to Sunshine Coast airport by Link Airways. These are a turboprop (propeller driven aircraft). These aircraft were not part of the earlier TEIA assumptions. These aircraft primarily fly over the Eumundi area.

The most common aircraft type operating at Sunshine Coast Airport is the A320, A321 and the B738 jet aircraft and the SF34 turboprop aircraft.

The jet aircraft demonstrate similar average L_{Amax} noise levels at each NMT as well as height and slant distances. There is a variation in the L_{Amax} noise levels to the individual aircraft movements, as evidenced by the differences between the minimum and maximum noise levels. These differences could be attributable to any number of factors, including meteorological conditions, thrust settings, height, and slant distances relative to the NMTs.

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Location	Aircraft Type	Departures					Arrivals				
		Average LMax (dBA)	Minimum LMax (dBA)	Maximum LMax (dBA)	Average Height at LAMax (ft)	Average Slant Distance (ft)	Average LMax (dBA)	Minimum LMax (dBA)	Maximum LMax (dBA)	Average Height at LAMax (ft)	Average Slant Distance (ft)
Mudjimba	B738	85	64	92	1,084	372	89	61	93	264	178
	A320	82	71	88	1,287	456	88	65	91	298	174
	A321	85	80	90	1,257	420	89	67	93	390	205
	SF34	78	71	86	795	314	88	66	94	262	193
Yandina	B738	69	61	77	3,337	1,144	72	54	81	1,392	510
	A320	70	63	74	3,089	1,033	71	57	82	1,402	531
	A321	71	67	79	3,292	1,122	72	56	82	1,377	529
	SF34	63	58	78	3,196	1,026	68	57	76	1,404	565
Eumundi	B738	-	-	-	-	-	65	56	71	2,812	1,074
	A320	-	-	-	-	-	67	64	71	2,873	1,063
	A321	-	-	-	-	-	66	60	69	2,860	1,093
	SF34	60	55	66	4,785	1,567	64	58	69	2,755	915
Weyba Downs	B738	62	54	72	6,121	2,245	61	55	72	2,925	1,652
	A320	61	55	70	6,145	2,193	62	55	76	2,968	1,638
	A321	62	57	65	5,673	2,089	61	54	73	2,964	1,664
	SF34	57	55	58	6,395	2,193	-	-	-	-	-
Castaways Beach	B738	61	57	70	6,891	2,509	62	57	76	3,851	1,620
	A320	63	57	71	3,877	1,635	62	57	72	6,986	2,480
	A321	62	58	73	3,876	1,632	63	56	75	6,831	2,533

12. Review TEIA community information against actual noise outcomes

Community information presented during pre-implementation engagement was completed based on the TEIA findings, and reflected the assumptions noted above that have since changed. Where differences are noted above, this was reflected in community information shared with the community pre-implementation.

13. Engage with the community on noise impacts and information

Engagement with the community has been ongoing throughout the PIR, including:

Timeline	Event
19 September 2020	Community Meeting – PIR commencement 25 attendees. Presentation, summary of discussion and video recording provided 23 September 2020
2 October – 4 November 2020	PIR Draft TOR Public Comment Period TOR available for public comment – 4 weeks. 460 submissions received.
8 December 2020	Online community meeting – TOR feedback 44 attendees. Presentation and recording provided 9 December 2021. Responses to 150+ questions provided 14 December 2020.
11 December 2020 – 31 January 2021	Updated Draft TOR & draft CEP Updated draft TOR and draft CEP available for public comment – 7 weeks. 180 submissions received on TOR. 77 submissions received on CEP.
1 February 2021	Final TOR released
29 March – 30 April 2021	Updated draft CEP Updated draft CEP available for review – 4 weeks. 12 submissions received.
31 May – 25 June 2021	Short-term Noise Monitor Expression of Interest Open To identify appropriate private properties for Short-term noise monitor siting. 44 EOIs received.
31 May 2021	Final CEP released
20 July - 26 September 2021	Request for feedback - NAPs Release of noise modelling report. Request for feedback/suggestions on NAPs – 10 weeks. 76 submissions received.
5 August 2021	Online Community Meeting – noise modelling, noise monitoring and NAPs 15 attendees. Presentation and video recording provided 6 August 2021.
30 September 2021	Short-Term Noise Monitoring Commenced Short-term noise monitors installed at Yandina Creek, Eumundi / Cooroy Mountain, and Mudjimba. Second round of monitoring commenced in April 2022 with noise monitors installed at Castaways Beach and Weyba Downs . Data available on WebTrak.

Timeline	Event
11 October 2021 – 14 January 2022	Request for Community Suggested Alternatives Request for Community Suggested Alternatives (CSAs) – 13 weeks. 105 submissions received.
18 November 2021	Community Meeting – CSA considerations 28 attendees. To answer questions about flight path design considerations and how to lodge suggested alternatives. Presentation provided 25 November 2022.
15 October 2022	Community Meeting – NAPs and CSA presentation 29 attendees. Presented submissions received on NAPs and SCA for discussion. Presentation provided 21 October 2021

Further details of this engagement, including summary reports, supporting documentation and videos is available on our [Engage Airservices](#) project page.

14. Updated analysis of aircraft movements based on actual operations

The following table provides a summary of actual aircraft operations on each procedure at Sunshine Coast.

Month	RNP Z 13	RNP W 13 (AR)	TAPET 31	MOOLO 31	Runway 13 Departures	Runway 31 Arrivals
Jul-20	68	25	19	19	64	47
Aug-20	51	3	42	23	49	84
Sep-20	71	12	36	15	67	57
Oct-20	55	16	27	20	64	48
Nov-20	72	20	28	24	75	47
Dec-20	100	78	38	138	164	176
Jan-21	155	149	16	32	304	60
Feb-21	138	111	14	31	238	49
Mar-21	210	155	24	85	366	123
Apr-21	250	227	18	100	472	131
May-21	210	186	28	81	397	129
Jun-21	117	122	33	133	268	193
Jul-21	95	59	38	129	161	191
Aug-21	43	32	39	37	83	79
Sep-21	60	22	42	44	90	91
Oct-21	45	19	43	52	59	99
Nov-21	57	20	24	33	80	75
Dec-21	194	197	20	52	389	80
Jan-22	168	387	17	34	569	69
Feb-22	104	226	18	45	341	66
Mar-22	141	276	24	133	419	155
Apr-22	208	470	15	53	672	80

Month	RNP Z 13	RNP W 13 (AR)	TAPET 31	MOOLO 31	Runway 13 Departures	Runway 31 Arrivals
May-22	181	349	19	79	541	110
Jun-22	124	208	22	167	368	224
Jul-22	135	205	35	170	357	223
Aug-22	142	205	28	123	383	179
Sep-22	125	196	30	195	353	247

15. Review of noise complaint data

The following table outline Airservices noise complaints over a two-year period, from runway opening in June 2020 to June 2022.

It identifies, in order, the locations with the highest number of individual complaints and the total number of contacts received from these community members.

Complainants – Top 10 Suburbs June 2020* – June 2022			First year of operation June 2020 – June 2021		Second year of operation June 2021 – June 2022	
Suburb	Complainants	Contacts	Complainants	Contacts	Complainants	Contacts
Mudjimba	139	563	129	480	24	83
Marcus Beach	77	1318	75	1213	15	105
Peregian Beach	64	711	53	623	20	88
Verrierdale	59	528	57	418	10	110
Eumundi	58	426	57	364	7	62
Yandina Creek	38	517	33	420	10	97
Marcoola	32	53	26	44	9	9
Doonan	25	229	24	208	4	21
Castaways Beach	23	103	23	99	3	4
Tinbeerwah	19	48	18	44	4	4

*The new runway and associated flight paths became operational on 14 June 2020.

The table below identifies the top 5 complainant issues recorded over this same two-year period.

Top 5 key Sunshine Coast complainant themes
Runway 13 RNP (AR)
Runway 31 Departures
Runway 13 RNP
Circuit Training - Fixed Wing Aircraft
Movements Outside Tower Hours

These themes are consistent with feedback received throughout the PIR.

APPENDIX C – COMMUNITY SUGGESTED FLIGHT PATH IMPROVEMENTS

Community Suggested Improvements

The PIR included a formal community suggested alternatives engagement period from 11 October 2021 to 9 January 2022. Airservices continued to receive submissions until 14 January 2022, all of which have been accepted and included in the PIR.

A total of 105 submissions were received throughout the submission period.

Submissions were reviewed and consolidated into 31 suggested changes as shown in the table below.

Flight Path Description	Suggested Change
All	<ul style="list-style-type: none"> Reinstate previously flown flight paths Avoid flight paths over specific areas No change to current flight paths Fly over the previously exposed community Over sea arrivals and departures only
RNP W RWY 13 (AR)	<ul style="list-style-type: none"> Remove RNP W RWY 13 (AR) Increase sharing of RNP W RWY 13 (AR) with RNP Z RWY 13 Increased usage of RNP W RWY 13 (AR), instead of RNP Z RWY 13 Move the RNP W RWY 13 (AR) to the south, over land / Maroochy River Reduce the RNP W RWY 13 (AR) tolerance from RNP 1.0 Adjust the RNP W RWY 13 (AR) arc further northwest
RNP Z RWY 13	<ul style="list-style-type: none"> Increased usage of RNP Z RWY 13, instead of RNP W RWY 13 (AR) Remove OLTUD Initial Approach Fix (IAF) of the RNP Z RWY 13 Rotate UPLOT – BSZNI segment of the RNP Z RWY 13 to the west, as per the original EIS position Rotate the RNP Z RWY 13 to the south, to track aircraft over cane fields and vacant land RNP Z RWY 13 to only to be used by aircraft arriving from the north
SID MOOLO ONE RWY 13	<ul style="list-style-type: none"> Rotate the SID MOOLO ONE RWY 13 to the north, to track aircraft east over the ocean
SID MOOLO ONE RWY 31	<ul style="list-style-type: none"> Remove SID MOOLO ONE RWY 31 Increased usage of SID TAPET ONE RWY 31, instead of SID MOOLO ONE RWY 31 Move the SID MOOLO ONE RWY 31 to turn to the south of the airport over land / Maroochy River Introduce a northern turn (once coast is cleared) on the SID MOOLO ONE RWY 31 Rotate the SID MOOLO ONE RWY 31 to the south, to track aircraft over cane fields Adjust the SID MOOLO ONE RWY 31 arc further north over Lake Weyba
SID TAPET ONE RWY 13	<ul style="list-style-type: none"> Rotate the SID TAPET ONE RWY 13 to the north, to track aircraft

Flight Path Description	Suggested Change
	east over the ocean
SID TAPET ONE RWY 31	<ul style="list-style-type: none"> Increased usage of SID MOOLO ONE RWY 31, instead of SID TAPET ONE RWY 31 Introduce a southern turn on the SID TAPET ONE RWY 31 Rotate the SID TAPET ONE RWY 31 to the south, to track aircraft over cane fields
Other	<ul style="list-style-type: none"> Create a Southwest Departure from RWY 31 Create a Northwest Departure for RWY 31 Create a RNP-AR approach for RWY 13 from the West No new flight paths over the hinterland

C.1.1 Assessment Methodology

The assessment of suggested alternatives was completed through desktop reviews by Airservices staff from Safety and Environment, Flight Path Design, Air Traffic Control and Community Engagement.

C.1.2 Assessment Criteria

Airservices regularly investigates community suggested improvements to the operation of the flight paths and procedures it has implemented. The existing process for these investigations will be applied to the consideration of alternatives as part of this PIR.

The process is undertaken in the order shown below, meaning; if a suggested improvement is not safe and operationally compliant, it will not progress further and will be discounted, and the reasons will be provided.

The existing process for investigating community suggested improvements is:

- Safety and operational compliance assessment** – does the change comply with international and national safety and design standards?
- Operational efficiency and feasibility assessment** – is the change flyable and efficient?
Also, does the change:
 - increase complexity to operations (the work of air traffic control in managing the air space or pilot workload in flying the flight path)?
 - increase track miles for industry (impacting emissions and operational cost)?
- Environmental assessment** – is the change environmentally appropriate?

Does the change:

- reduce noise levels or the number of people impacted
 - affect new communities
 - better share the impact of noise in keeping with our Flight Path Design Principles (we do not consider proposals that seek to move aircraft noise from one community to another as responsible)
 - result in greater track miles for industry (and thus greater emissions)
 - impact areas of national environmental significance and noise sensitive sites
 - impact areas of future residential development or areas of high tourism value?
- Network assessment** –
Does the change:
 - have flow on effects or require changes to other procedures or flight paths

- impact or benefit overall network efficiency
- involve a cost
- have a benefit appropriate to the cost?

The *Air Services Act 1995* requires that Airservices, “*In exercising its powers and performing its functions, must regard the safety of air navigation as the most important consideration*”.

When considering flight path design, safety is assured through:

- separation of aircraft from each other according to flight rules and the type of air traffic service provided
- clearance between aircraft and terrain and/or man-made obstacles
- segregation of aircraft operations
- the ability of aircraft to operate safely within their performance envelope
- minimising operational complexity.

The design and operation of flight paths must meet the following CASA regulations and standards, as well as International Civil Aviation Organization (ICAO) standards and recommended practices that have been adopted by CASA for application in Australia:

- *Air Services Act 1995* (Cth)
- Airports (Protection of Airspace) Regulations 1996 (Cth)
- *Civil Aviation Safety Regulations 1998* (Cth) (CASR) Part 173 – Instrument flight procedure design
- CASR Manual of Standards Part 173 – Standards Applicable to Instrument Flight Procedures Design
- ICAO DOC 8168 Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)
- ICAO DOC 9613 Performance-based Navigation (PBN) Manual
- ICAO DOC 9905 Required Navigation Performance Authorization Required (RNP-AR) Procedure Design Manual

If a community suggestion does not meet the safety and compliance assessment it will not be able to progress, regardless of how it would perform against the other assessment criteria.

Each suggested alternative has been assessed for population using a 1km buffer either side of the nominal flight path, rounded to the nearest 100. Data from the 2021 Census has been used.

Additionally, the suggestions have been assessed for emissions and fuel burn per operation to a common waypoint, where possible. Numbers may vary depending on the type of aircraft (with B738 being used as the one of the common aircraft operating at Sunshine Coast Airport). This assessment has been conducted using the ICAO Carbon Emissions Calculator Methodology Version 11.

Assessment of Community Suggested Improvements

C.1.3 Reinstate previously flown flight paths

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	Reinstating the pre-14 June 2020 flight paths is not an alternative that Airservices can consider as the former runway has been decommissioned.

Assessment outcome: *This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.*

C.1.4 Avoid flight paths over specific areas

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	<p>The Sunshine Coast airspace and flight path design was based on the approved EIS which avoided built up areas to the best extent possible, while being safe and compliant.</p> <p>Flight paths are constrained by the location of an airport and the orientation of the runway(s), the local weather and meteorological conditions, the natural and/or urban terrain, aircraft performance and/or navigation capability, or the existing air traffic network and airspace architecture. It is not possible to guarantee any suburb, group, or individual exemption from aircraft noise exposure.</p> <p>Further information can be found in our Flight Path Design Principles.</p>

Assessment outcome: *This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.*

C.1.5 No change to the current flight paths

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	The outcomes of PIRs are used by Airservices to inform future change considerations, decision-making and the continuous improvement of our processes, as well as to identify

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			<p>opportunities to improve noise outcomes for the community or improve operational efficiency where practicable.</p> <p>The Sunshine Coast airspace and flight path design was based on the approved EIS which avoided built up areas to the best extent possible, while being safe and compliant.</p>
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	No	The suggestion is to leave the current flight paths as they are.
	Increase track miles for industry (impacting emissions and operational cost)	No	The suggestion is to leave the current flight paths as they are.
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	No	The suggestion is to leave the current flight paths as they are.
	Affect new communities	No	The suggestion is to leave the current flight paths as they are.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The suggestion is to leave the current flight paths as they are.
	Result in greater track miles for industry (and thus greater emissions)	No	The suggestion is to leave the current flight paths as they are.
	Impact areas of national environmental significance and noise sensitive sites	No	The suggestion is to leave the current flight paths as they are.
	Impact areas of future residential development or areas of high tourism value	No	The suggestion is to leave the current flight paths as they are.
Network	Have flow on effects or require changes to other procedures or flight paths	No	The suggestion is to leave the current flight paths as they are.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Impact or benefit overall network efficiency	N/A	The suggestion is to leave the current flight paths as they are.
	Involve a cost	No	The suggestion is to leave the current flight paths as they are.
	Have a benefit appropriate to the cost	N/A	The suggestion is to leave the current flight paths as they are.

Assessment outcome: *This suggestion will be included and considered against alternative community suggestions.*

C.1.6 Fly over the previously exposed community

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	Aircraft arrive and depart into the wind. As the wind direction changes, the runway being used will change. There is a minimum distance that an aircraft must be aligned with the runway orientation to ensure and safe/stable aircraft departure and approach. The new runway configuration does not permit aircraft to be tracked over previously exposed communities identified in community suggestions.

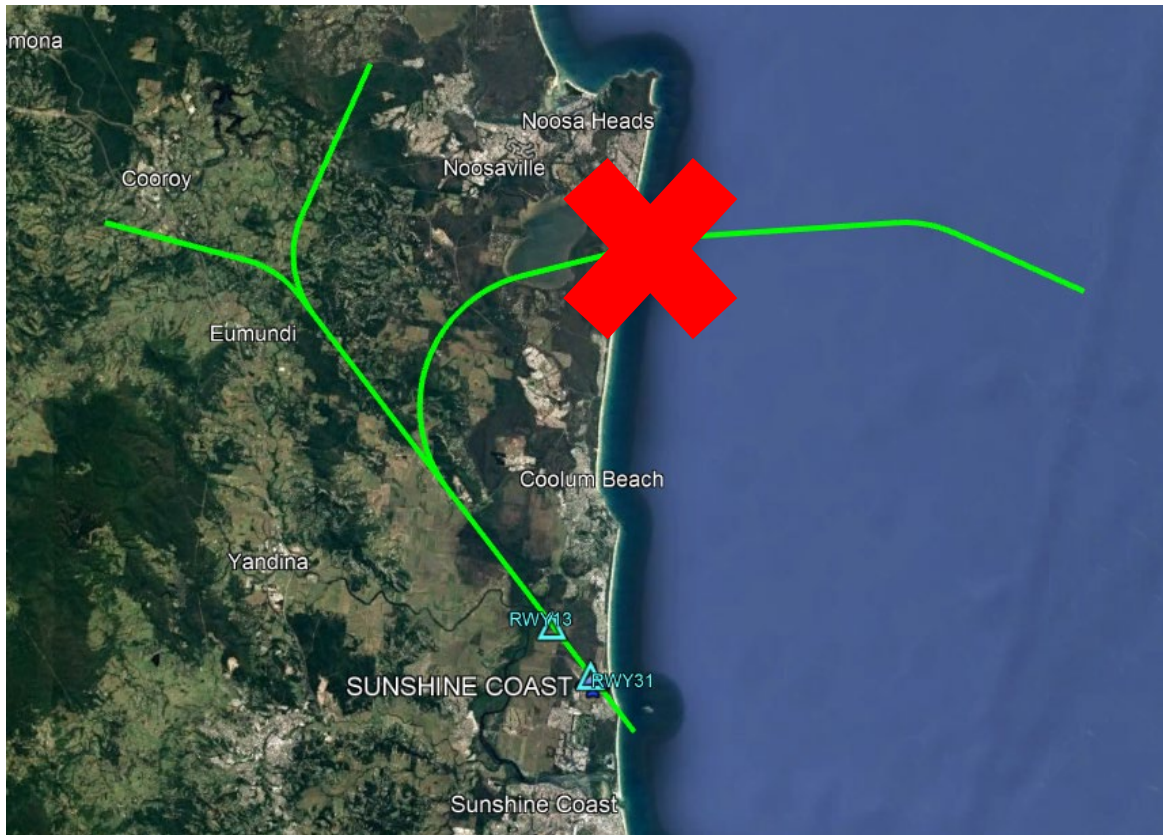
Assessment outcome: *This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.*

C.1.7 Over sea arrivals and departures only

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	The majority of the flight paths are over the sea. Aircraft arrive and depart into the wind. As the wind direction changes, the runway being used will change. There is a minimum distance that an aircraft must be aligned with the runway orientation to ensure and safe/stable aircraft departure and approach. The new runway configuration does not permit aircraft to solely operate over the sea.

Assessment outcome: *This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.*

C.1.8 Remove RNP W RWY 13 (AR)



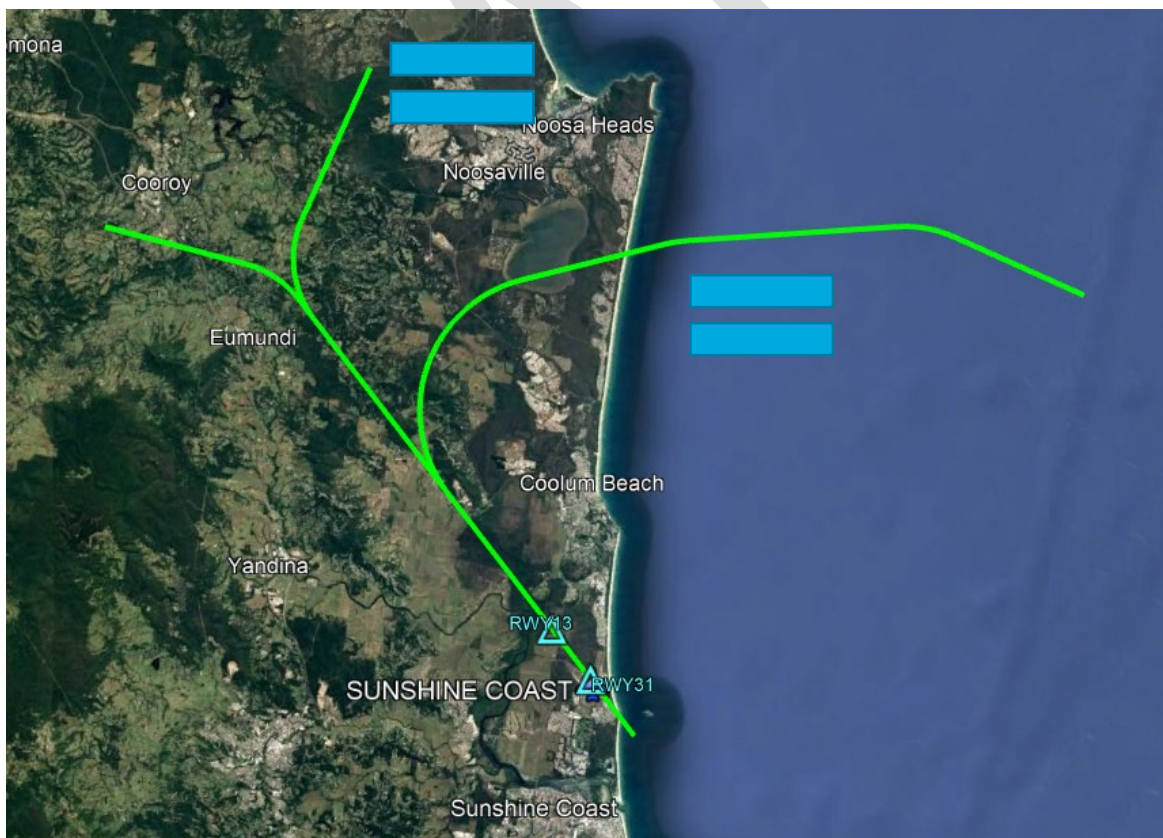
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant. International and Australian safety regulators encourage the use of RNP-AR approaches due to the increased predictability of flights and associated safety benefits, including during poor weather.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	Less options for ATC aircraft sequencing and increase workload. Loss of the ability to perform an RNP-AR approach for RWY 13 into Sunshine Coast Airport.
Is the change flyable and efficient	Increase track miles for industry (impacting emissions and operational cost)	Yes	On average there is an additional 11nm in track miles using the RNP Z RWY 13 flight path as opposed to the RNP W RWY 13 (AR). Aircraft use the RNP W RWY 13 (AR) due to the track mile, CO2, and flight time savings it offers over the longer RNP Z RWY 13 flight path.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			Aircraft use the RNP Z RWY 13 approach without required authorisation/equipment to fly the AR or when operationally required for sequencing.
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	No	<p>1,500 population under RNP W RWY 13 (AR).</p> <p>2,600 population under RNP Z RWY 13.</p> <p>Will remove aircraft over the communities under the RNP W RWY 13 (AR) flight path, however, will transfer aircraft operations to the communities under the RNP Z RWY 13 flight path.</p> <p>This will increase the number of exposed population by 1,100 per arrival and increase the number of arrivals by 10 up to 14 arrivals on an average day for communities</p>
	Affect new communities	No	This suggested change utilises existing procedures. No new flight paths.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	Removal of the RNP W RWY 13 (AR) will concentrate aircraft over the longer RNP Z RWY 13 flight path.
	Result in greater track miles for industry (and thus greater emissions)	Yes	On average there is an additional 11nm in track miles using the RNP Z RWY13 flight path as opposed to the RNP-W RWY13 (AR) flight path per arrival. This results in an additional 64kg of fuel burn and 200kg of CO ₂ emissions per arrival. (Depending on type of aircraft).
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change utilises existing procedures. No new flight paths.
	Impact areas of future residential development or areas of high tourism value	No	This suggested change utilises. existing procedures. No new flight paths

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	Removing the RNP W RWY 13 (AR) would increase usage of the longer RNP Z RWY 13 flight path.
	Impact or benefit overall network efficiency	Impact	Due to less available approaches, this change would impact network efficiency with lack of sequencing opportunities and increase delays/likelihood of holding.
	Involve a cost	No	No cost to remove the RNP W RWY 13 (AR).
	Have a benefit appropriate to the cost	No	This change would shift noise, impact operational efficiency, and involve a cost to industry.

Assessment outcome: The suggestion to remove the RNP W RWY 13 (AR) flight path will not progress for further assessment due to it not meeting regulator and industry requirements and the impacts on the community.

C.1.9 Increase sharing of RNP W RWY 13 (AR) with RNP Z RWY 13

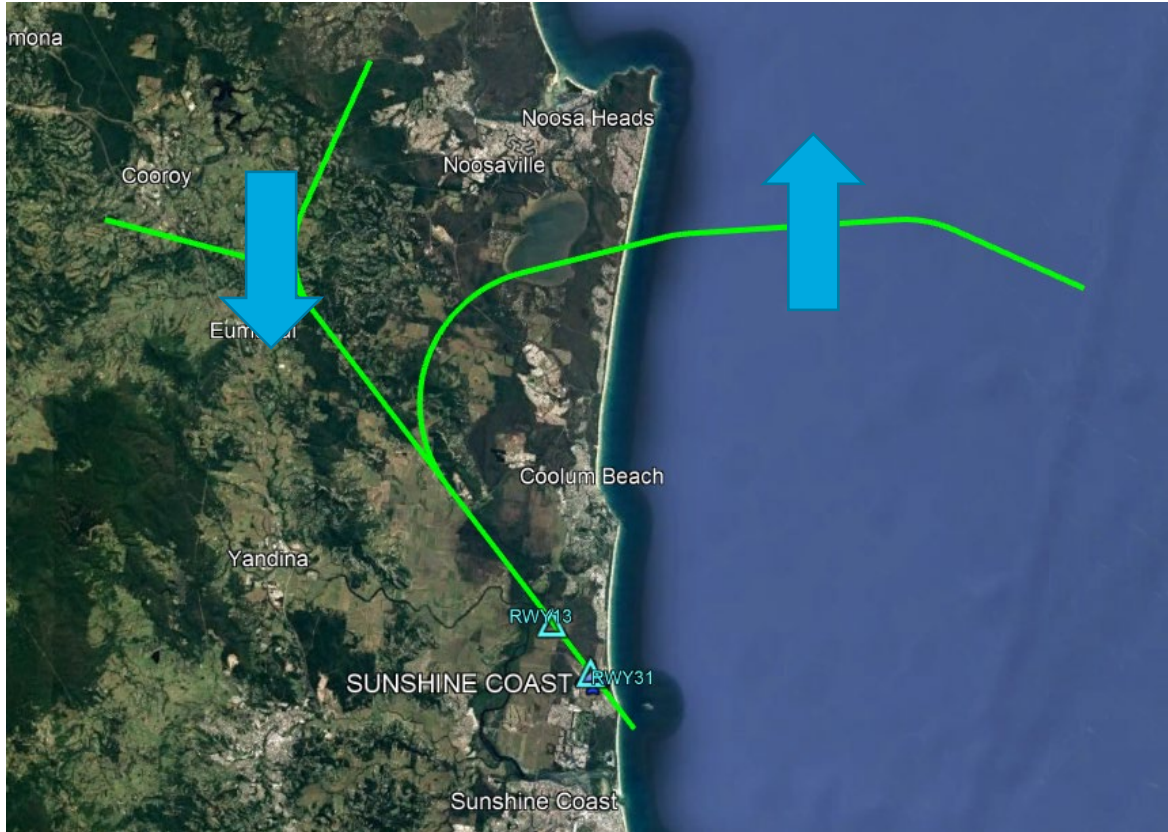


Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	Increase ATC workload on monitoring equal distribution of aircraft on arrival flight tracks. Increase pilot workload to brief the approach.
	Is the change flyable and efficient Increase track miles for industry (impacting emissions and operational cost)	Yes	On average there is an additional 11nm in track miles using the RNP Z RWY13 flight path as opposed to the RNP-W RWY13 (AR) flight path. Aircraft use the RNP W RWY 13 (AR) due to the track mile, CO2, and flight time savings it offers over the longer RNP Z RWY 13 flight path. Aircraft use the RNP Z RWY 13 approach without required authorisation/equipment to fly the AR or when operationally required for sequencing.
Environmental	Is the change environmentally appropriate? Reduce noise levels or the number of people impacted	No	1,500 population under RNP W RWY 13 (AR) 2,600 population under RNP Z RWY 13 Will lower the number of aircraft over the communities under the RNP W RWY13 (AR) flight path, however, will transfer aircraft operations to the communities under the RNP Z RWY13 flight path. This will increase the number of exposed population by 1,100 per arrival and increase the number of arrivals by three up to seven arrivals on an average day for communities under the RNP Z RWY13 flight path. This results in a reduction of the number of arrivals by three down to seven arrivals on an average day for communities under the RNP W RWY13 (AR) flight path.
	Affect new communities	No	This suggested change utilises existing procedures. No new flight paths.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Better share the impact of noise in keeping with our Flight Path Design Principles	Yes	The increased usage of the RNP Z RWY13 will better share aircraft operations with the RNP-W RWY13 (AR).
	Result in greater track miles for industry (and thus greater emissions)	Yes	On average there is an additional 11nm in track miles using the RNP Z RWY13 flight path as opposed to the RNP-W RWY13 (AR) flight path per arrival. This results in an additional 64kg of fuel burn and 200kg of CO ₂ emissions per arrival. (Depending on type of aircraft).
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change utilises existing procedures. No new flight paths.
	Impact areas of future residential development or areas of high tourism value	No	This suggested change utilises existing procedures. No new flight paths.
Network	Have flow on effects or require changes to other procedures or flight paths	No	No change to existing flight paths.
	Impact or benefit overall network efficiency	Impact	Reduction in efficiency to manage equal approach distribution. Less optimised sequencing. Increased likelihood of holding.
	Involve a cost	No	No change to existing flight paths.
	Have a benefit appropriate to the cost	Yes	This change may provide community benefit.

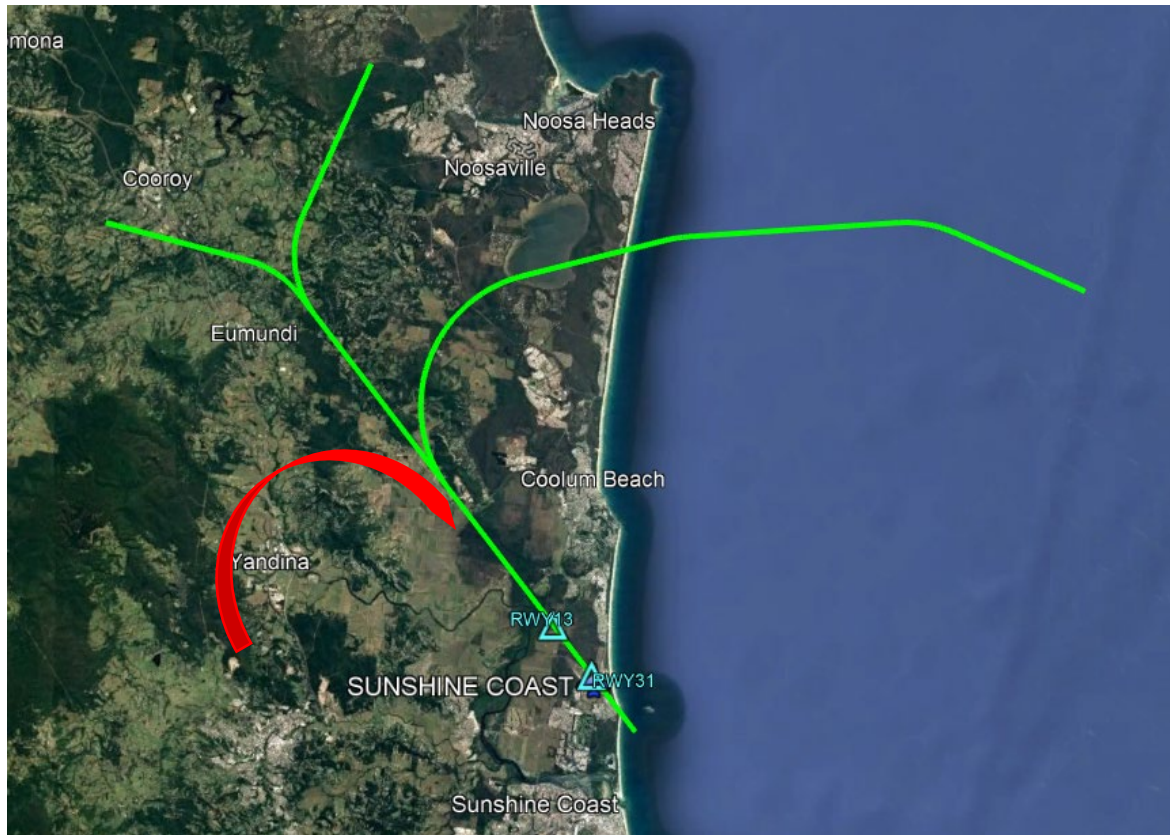
Assessment outcome: The suggestion to increase sharing of RNP W RWY 13 (AR) with RNP Z RWY 13 is best achieved through NAPs and will progress for further assessment.

C.1.10 Increased usage of RNP W RWY 13 (AR), instead of RNP Z RWY 13



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	<p>Not all aircraft are authorised or have the necessary equipment to conduct an RNP-AR approach.</p> <p>The RNP Z RWY 13 must remain an available approach for those aircraft without required authorisation/equipment to fly the RNP W RWY 13 (AR).</p>

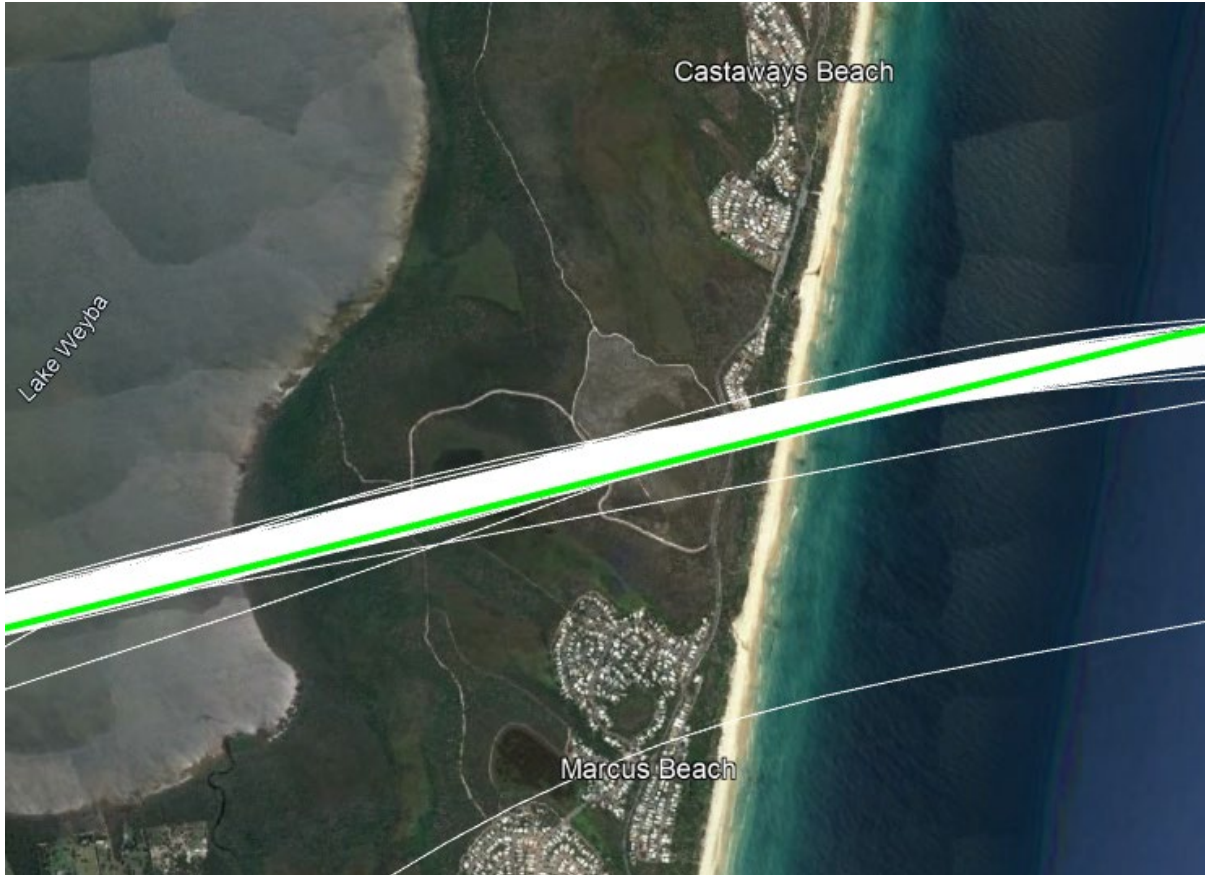
Assessment outcome: *This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.*

C.1.11 Move the RNP W RWY 13 (AR) to the south, over land / Maroochy River

Assessment outcome: The suggestion to move the RNP W RWY 13 (AR) to the south, over land / Maroochy River is constrained by Brisbane operations. Through the PIR for the Brisbane New Parallel Runway Flight Paths, Airservices will look for ways optimise the performance of the wider Brisbane Airspace system. Airservices will revisit this suggested alternative during Brisbane works.

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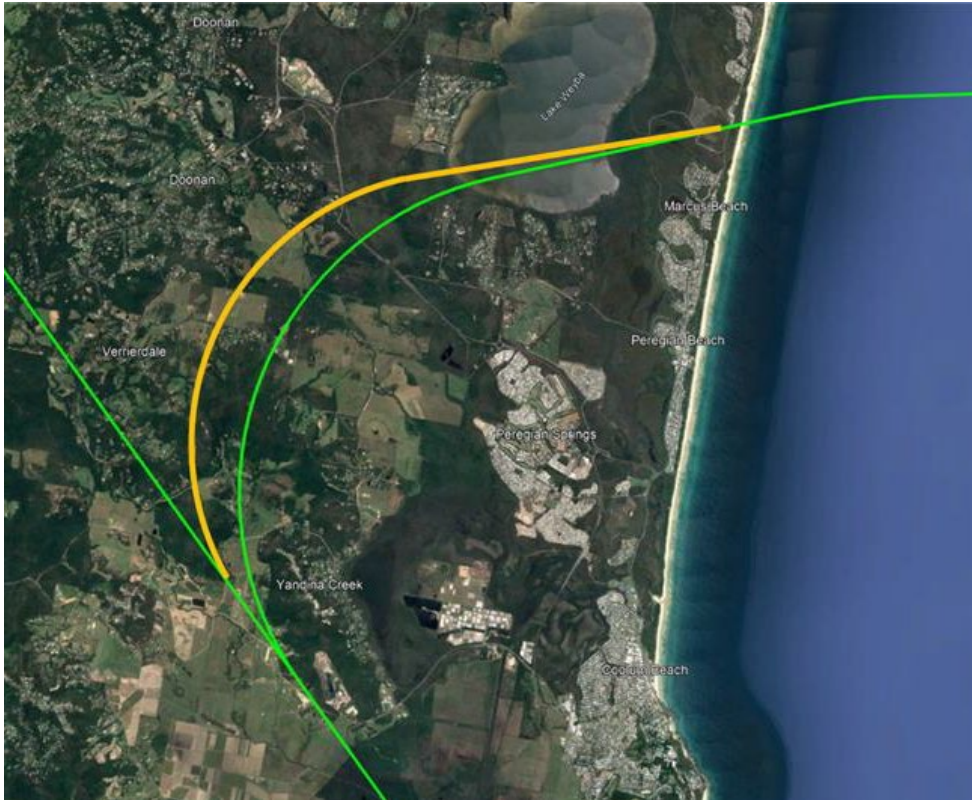
C.1.12 Reduce the RNP W RWY 13 (AR) tolerance from RNP 1.0



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	A reduction of the RNP tolerance from RNP 1.0 to RNP 0.3-0.1 is nonstandard for the initial segment of an RNP-AR approach as outlined in CASA MOS 173. It must also be noted that tightening tolerances will not make aircraft fly more accurately, only notify them when they cannot meet the required accuracy. The system already flies a very tight tolerance along the line and aims to be exactly on the line, regardless of RNP value.

Assessment outcome: Reducing the RNP approach tolerances will not progress for further assessment. The above image is a snapshot of all RNP W RWY 13 (AR) operations (white tracks) for the period 01/01/2022 – 30/06/2022, the green line is the nominal RNP W RWY 13 (AR) flight path. The furthest extent of standard RNP-AR flight tracks is approximately 180m north of track, within an RNP 0.1 tolerance.

C.1.13 Adjust the RNP W RWY 13 (AR) arc further northwest

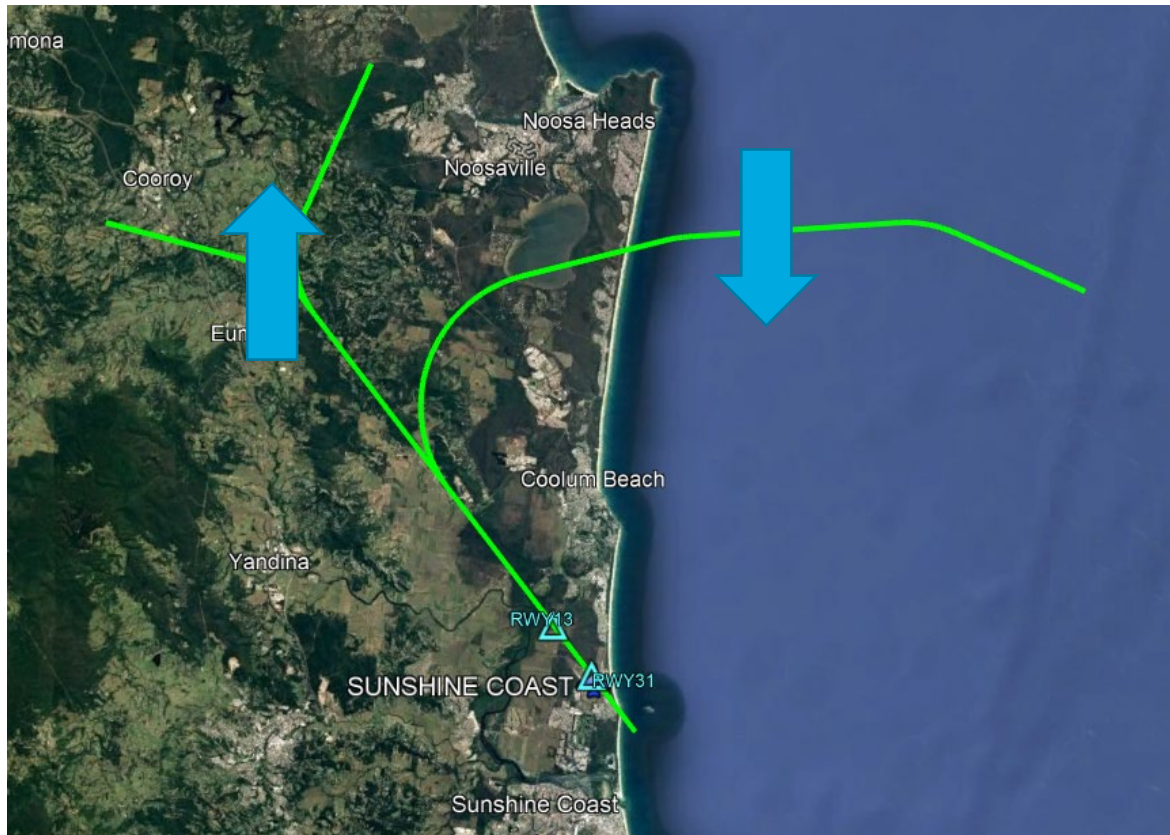


Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant.
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	No	The adjustment will not increase the complexity of operations.
	Increase track miles for industry (impacting emissions and operational cost)	No	No material differences in track miles.
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	No	1,500 population under the existing RNP W RWY 13 (AR) 1,600 population under the suggested RNP W RWY 13 (AR)

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			Will remove aircraft over the communities under the existing RNP W RWY 13 (AR) flight path, however, will transfer aircraft operations to the communities under the suggested flight path further northwest and will expose an extra population of 100 per arrival.
	Affect new communities	Yes	This suggested change will move the track more over Doonan.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The suggested change will only transfer aircraft operations from the existing RNP W RWY13 (AR) flight path.
	Result in greater track miles for industry (and thus greater emissions)	No	No material differences.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Lake Weyba and Coolum Creek and Lower Maroochy River. This currently is overflowed by the existing RWY13 RNP-W (AR) flight path.
	Impact areas of future residential development or areas of high tourism value	No	We have not identified areas of future residential development or areas of high tourism value.
Network	Have flow on effects or require changes to other procedures or flight paths	No	Will not have and flow on effects or require changes to other procedures or flight paths.
	Impact or benefit overall network efficiency	N/A	No impact or benefit to network efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for a new instrument procedure.
	Have a benefit appropriate to the cost	No	This proposal would not provide benefit to the community due to the shifting of noise.

Assessment outcome: This suggestion will not progress for further assessment as it would not provide benefit to the community due to the shifting of noise.

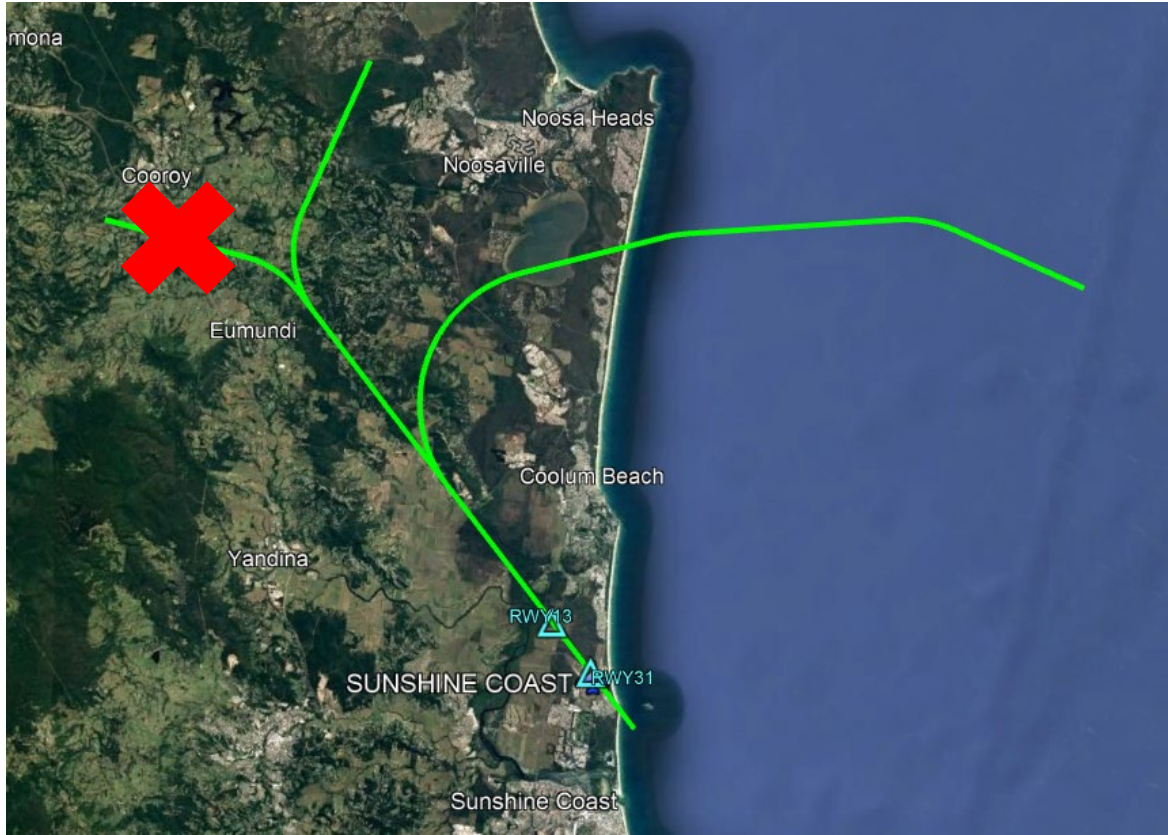
C.1.14 Increased usage of RNP Z RWY 13, instead of RNP W RWY 13 (AR)



Assessment outcome: The suggestion to increase the usage of RNP Z RWY 13, instead of RNP W RWY 13 (AR) is best achieved through NAPs. Currently, more aircraft utilise the RNP W RWY 13 (AR) instead of the RNP Z RWY 13. This suggestion has been captured in CSA: Increase sharing of RNP W RWY 13 (AR) with RNP Z RWY 13.

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C.1.15 Remove OLTUD Initial Approach Fix (IAF) of the RNP Z RWY 13



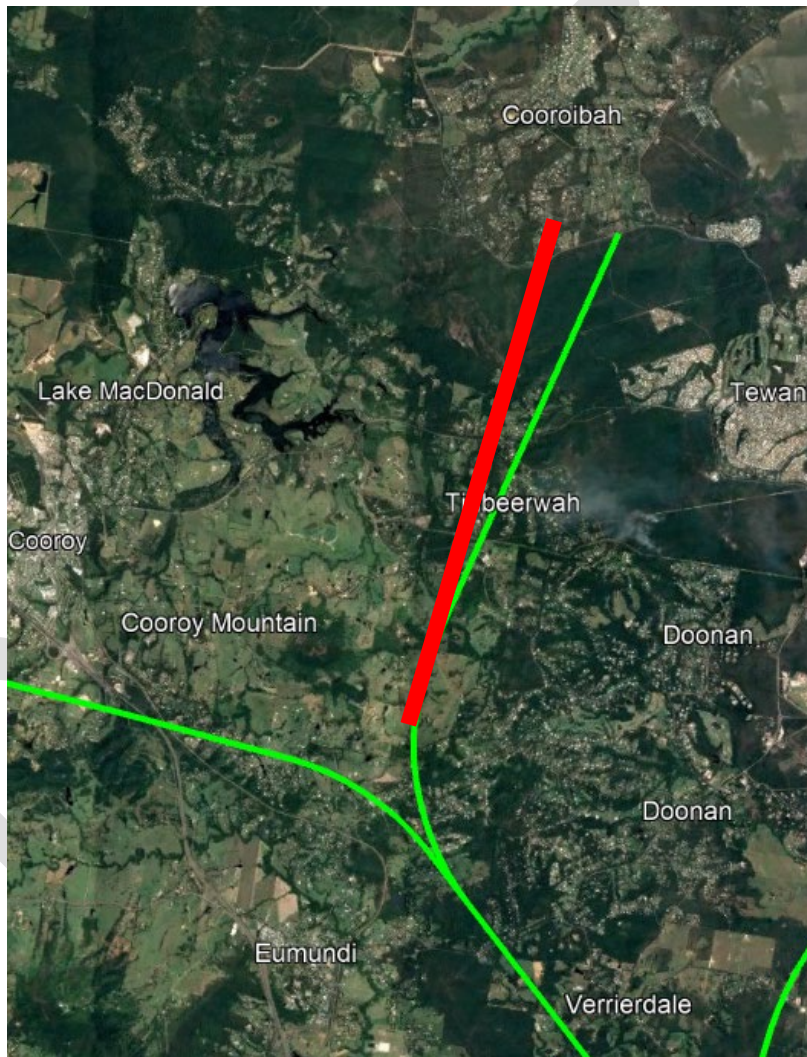
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Another IAF would need to be designed in a similar location.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	Would require ATC to track aircraft to join the RNP Z RWY 13 from a less efficient location. May increase pilot workload to track to an alternative location.
	Is the change flyable and efficient Increase track miles for industry (impacting emissions and operational cost)	No	No material differences.
Environmental	Is the change environmentally appropriate? Reduce noise levels or the number of people impacted	No	3,600 population under RNP Z RWY13 (to SUSGI via OLTUD).
			12,400 population under RNP Z RWY13 (to SUSGI via suggested change).

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			Removing the RWY13 RNP-Z flight path via OLTUD initial Approx Fix and utilising a new approach will expose an extra population of 8,800 per arrival out to SUSGI. Based on the last six months, this will shift 300 operations in a six-month period or around an extra two arrivals per day onto this new approach.
	Affect new communities	Yes	This suggested change utilises new procedures and new flight paths which will likely affect new communities.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The suggested change will only transfer aircraft operations from the existing RNP Z RWY13.
	Result in greater track miles for industry (and thus greater emissions)	No	No material differences.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Coolum Creek and Lower Maroochy River and within a buffer zone for the Great Sandy Straight RAMSAR Wetlands.
	Impact areas of future residential development or areas of high tourism value	No	We have not identified areas of future residential development or areas of high tourism value.
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	Require amendment to STAR SEBVA ONE ZULU RWY 13.
	Impact or benefit overall network efficiency	Impact	Due to available IAF options, removal of OLTUD IAF may impact network efficiency with lack of sequencing opportunities and introduce unknown tracking. Would increase delays and likelihood of holding.
	Involve a cost	Yes	Due to the flow on effects of this proposal, this would involve design, assessment, and implementation (including documentation amendments and ATC training) for a new instrument procedure.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Have a benefit appropriate to the cost	No	This change would impact operational efficiency, impact new communities, and involve a cost to industry.

Assessment outcome: The suggestion to remove OLTUD Initial Approach Fix (IAF) of the RNP Z RWY 13 will not progress for further assessment due to the impacts on new communities and operational efficiency.

C.1.16 Rotate UPLOTT – BSNZ segment of the RNP Z RWY 13 to the west, as per the original EIS position



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant.
	Increase complexity to	No	Will not change the way the procedure is flown.

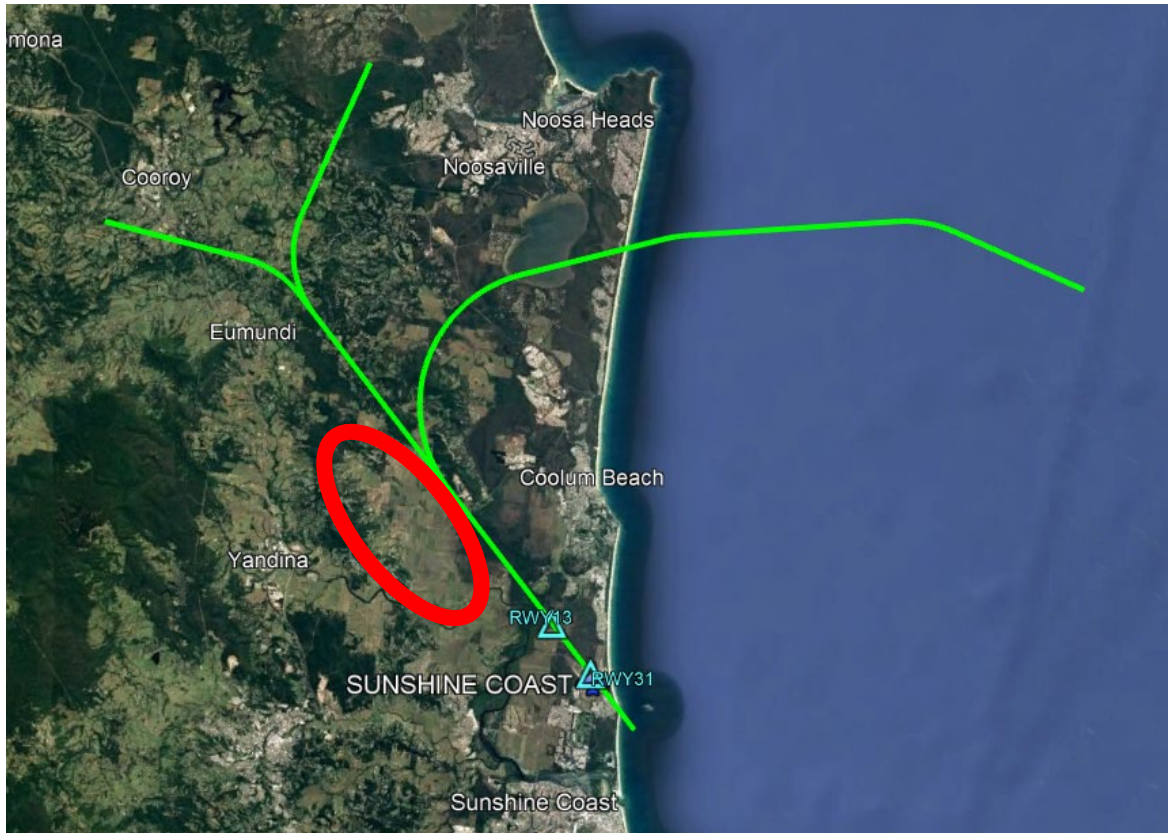
Assessment Criteria	Does the change?	Assessment Outcome	Justification	
Operational efficiency and feasibility	operations (the work of ATC in managing the air space or pilot workload in flying the flight path)			
Is the change flyable and efficient	Increase track miles for industry (impacting emissions and operational cost)	No	No material differences.	
Environmental	Reduce noise levels or the number of people impacted	No	2,600 population under RNP Z RWY 13. 3,000 population under suggested RNP Z RWY 13. Shifting the RWY13 RNP Z flight path at BSZNI to the west will expose an extra population of 400 per arrival. Based on the last six month, this will shift 600 operations in a six-month period or around an extra four arrivals per day onto this new approach.	
	Affect new communities	No	This suggested change will shift the track towards the centre of Cooroibah.	
	Is the change environmentally appropriate?	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The suggested change will only transfer aircraft operations from the existing RNP Z RWY 13 flight path.
	Result in greater track miles for industry (and thus greater emissions)	No	No material differences.	
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Noosa River Wetlands and Coolum Creek and Lower Maroochy River and within a buffer zone for the Great Sandy Straight RAMSAR Wetlands.	
	Impact areas of future residential development or areas of high tourism value	No	We have not identified areas of future residential development or areas of high tourism value.	
Network	Have flow on effects or require changes to other	Yes	Would require amendment to STAR REBEG TWO ZULU RWY 13.	

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	procedures or flight paths		
	Impact or benefit overall network efficiency	N/A	Negligible change to overall network efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for the amended instrument procedure.
	Have a benefit appropriate to the cost	No	This proposal would not provide benefit to the community due to the shifting of noise.

Assessment outcome: *The suggestion to rotate the UPLLOT – BSZNI segment of the RNP Z RWY 13 to the west, as per the original EIS position will not progress for further assessment due to the impacts on the community.*

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C.1.17 Rotate the RNP Z RWY 13 to the south, to track aircraft over cane fields and vacant land



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	The final approach segment cannot be offset for noise abatement reasons. Introducing a turn after prior to the final approach segment would degrade safety by making the approach unnecessarily more challenging to fly. Offset RNP approaches have previously been rejected by CASA.

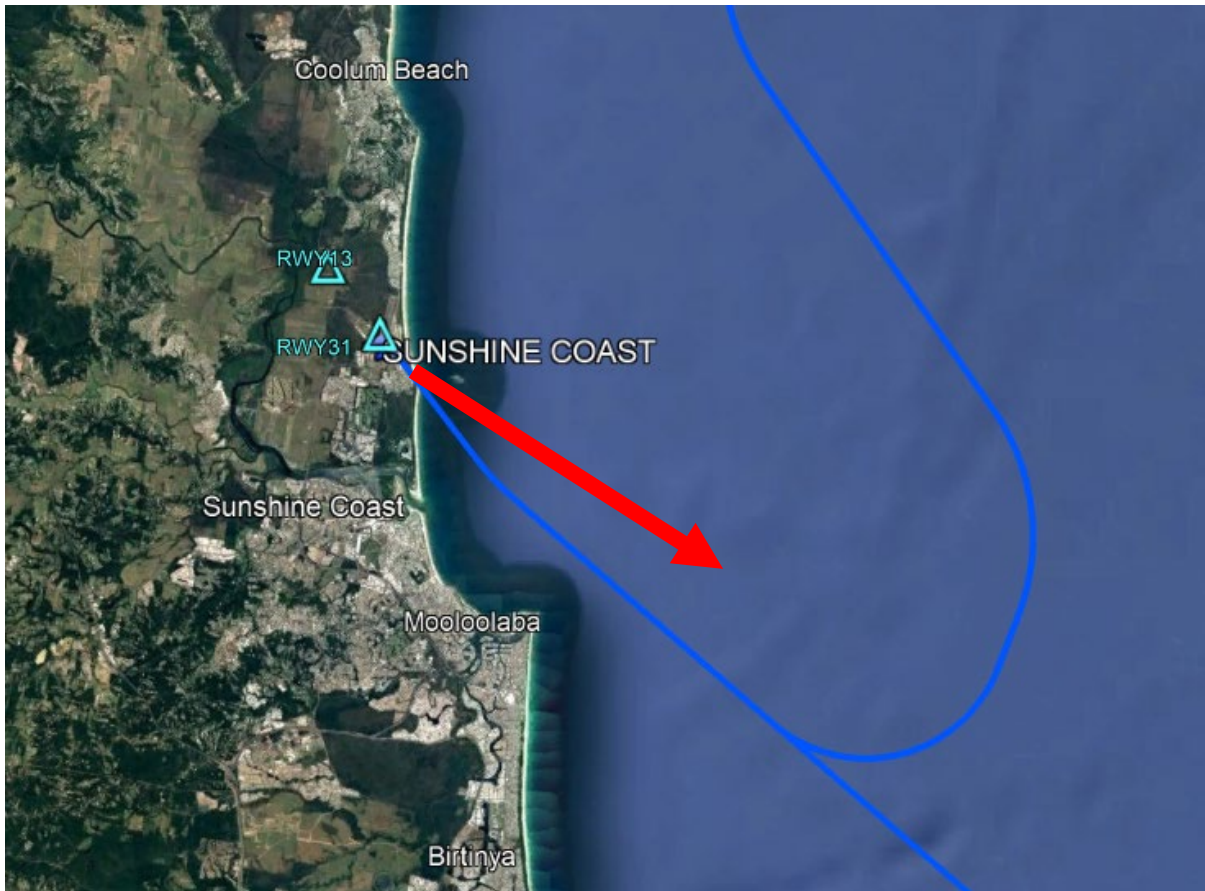
Assessment outcome: This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.

C.1.18 RNP Z RWY 13 to only to be used by aircraft arriving from the north

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	Not all aircraft are RNP-AR equipped, aircraft arriving from different directions may be required to arrive via the RNP Z RWY 13.

Assessment outcome: This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.

C.1.19 Rotate the SID MOOLO ONE RWY 13 to the north, to track aircraft east over the ocean



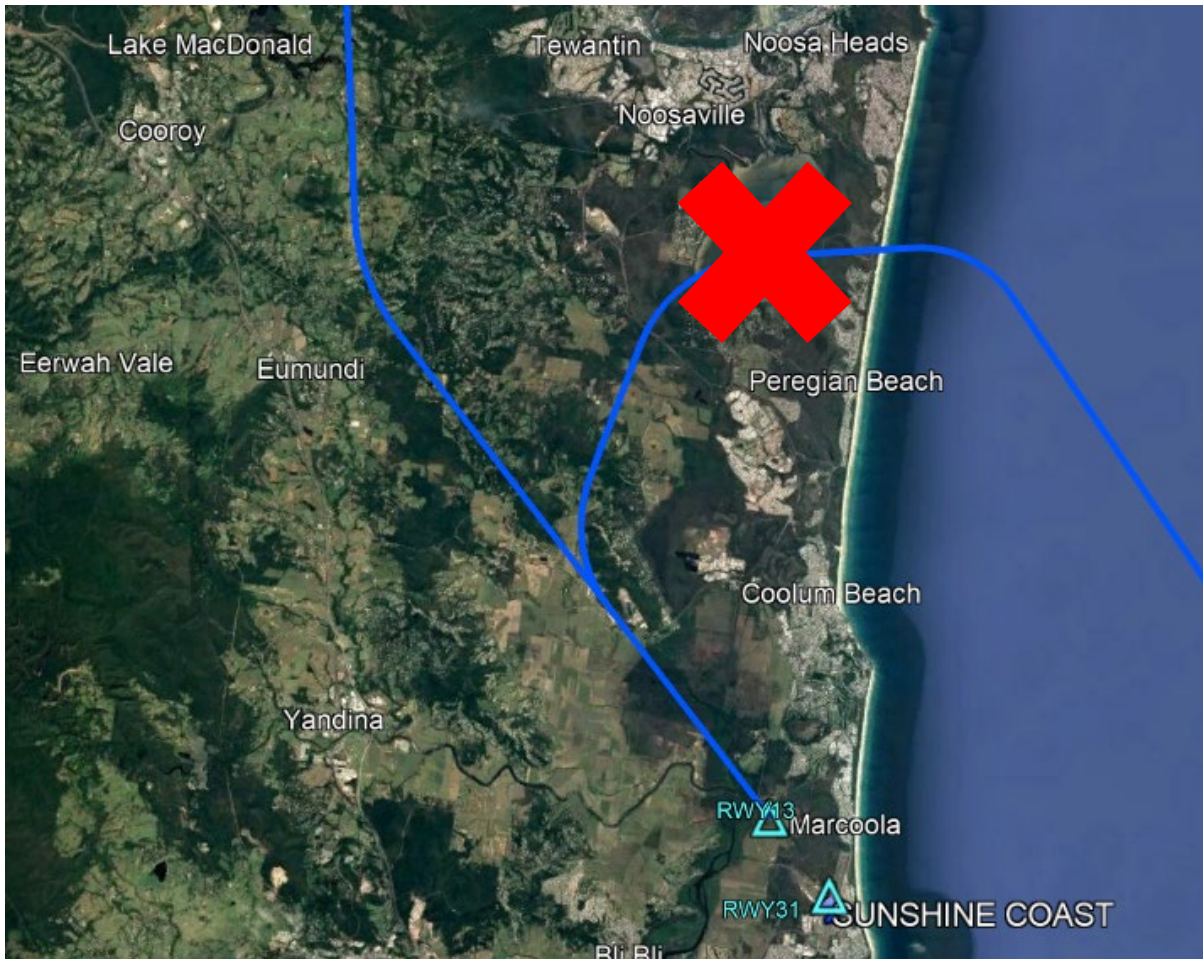
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Significant redesign would be required to ensure the proposal is safe and compliant.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	Increase complexity for ATC to separate the SID MOOLO ONE RWY 13 from the SID TAPET ONE RWY 13 by introducing a track crossover.
Is the change flyable and efficient	Increase track miles for industry (impacting emissions and operational cost)	No	No material differences.
Environmental	Reduce noise levels or the number of people impacted	No	No material differences.



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Is the change environmentally appropriate?			This suggested change closely utilises existing procedures and is a short distance from the airport to overwater. A turn shortly after departure has the potential to degrade climb performance.
	Affect new communities	No	The change will likely still impact the same communities.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The change will likely still impact the same communities.
	Result in greater track miles for industry (and thus greater emissions)	No	No material differences.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change closely utilises existing procedures and is a short distance from the airport to overwater.
	Impact areas of future residential development or areas of high tourism value	No	This change is over water.
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	This change would require RWY 13 redesign (SIDs/STARs impacted). Significant increase to track miles of impacted procedures.
	Impact or benefit overall network efficiency	Impact	Loss in network efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for the new instrument procedure.
	Have a benefit appropriate to the cost	No	This change is expected to offer negligible benefit to the community with significant impact to operational efficiency with flow on effects to the network.

Assessment outcome: The suggestion to rotate the SID MOOLO ONE RWY 13 to the north, to track aircraft east over the ocean will not progress for further assessment due to the negligible benefit to the community and impact on operational efficiency/flow on network impacts.

C.1.20 Remove SID MOOLO ONE RWY 31



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Significant redesign would be required to ensure the proposal is safe and compliant.
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	No SID for departures to the East and South.
	Increase track miles for industry (impacting emissions and operational cost)	Yes	On average there is an additional 16nm in track miles using a southern turn via TAPET as opposed to the using SID MOOLO per departure.
Environmental	Reduce noise levels or the	No	1,400 population under RWY 31 MOOLO SID.

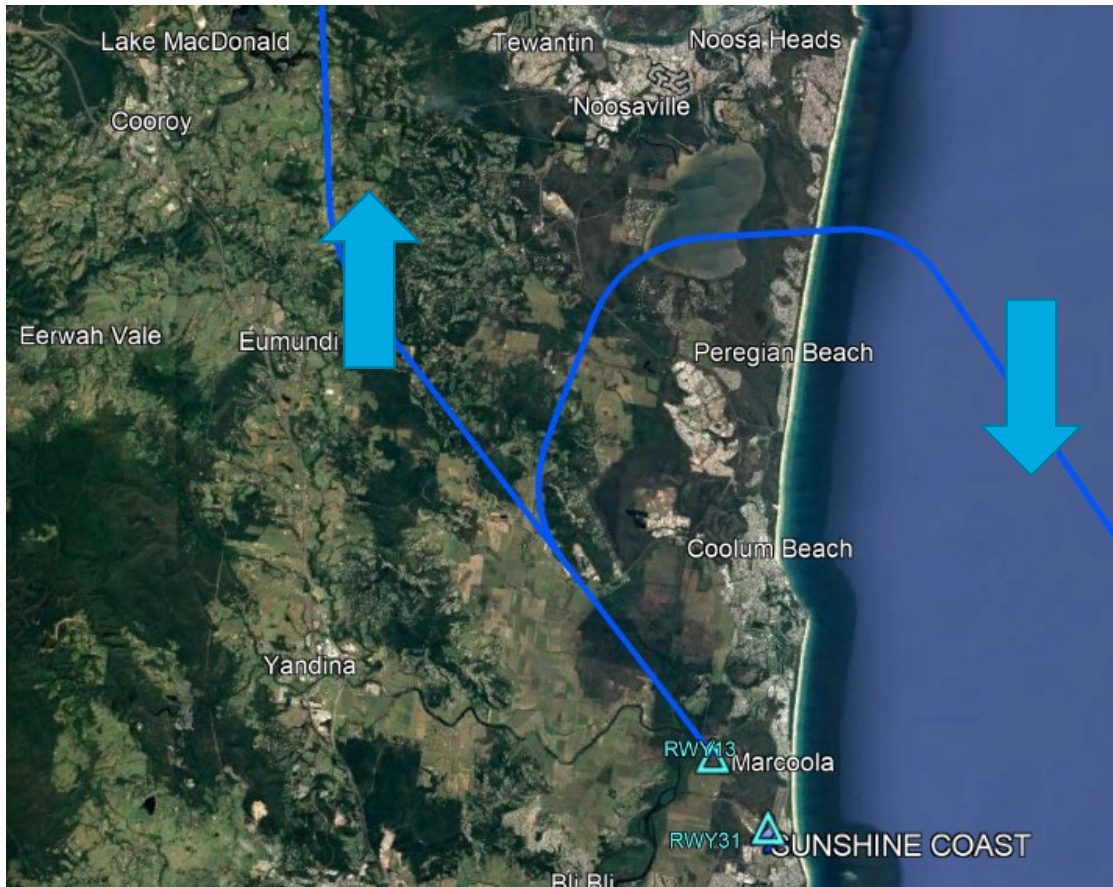
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Is the change environmentally appropriate?	number of people impacted		<p>2,100 population under RWY 31 TAPET SID.</p> <p>Will remove the number of aircraft over the communities under the RWY31 MOOLO SID, however will transfer aircraft operations to the communities under the RWY31 TAPET SID.</p> <p>This will increase the number of exposed population by 700 per departure and increase the number of departures to three on an average day for communities under the RWY 31 TAPET SID. Currently, RWY 31 TAPET is only used a few times a week.</p>
	Affect new communities	No	This suggested change will shift the operations over Cooroibah and Noosa North Shore, these communities currently have RWY13 RNP Z arrivals.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	Removal of the RWY31 MOOLO SID will concentrate aircraft over the longer RWY 31 TAPET SID with a new departure flight path south.
	Result in greater track miles for industry (and thus greater emissions)	Yes	On average there is an additional 16nm in track miles using a southern turn via TAPET as opposed to the using SID MOOLO per departure. This results in an additional 93kg of fuel burn and 290kg of CO2 emissions per departure. (Depending on type of aircraft).
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Noosa River Wetlands and Coolum Creek and Lower Maroochy River and within a buffer zone for the Great Sandy Straight RAMSAR Wetlands.
	Impact areas of future residential development or areas of high tourism value	No	This suggested change affects existing procedures. No new flight paths.
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	This change would trigger a large redesign of all approaches onto Runway 31 from the North to track inside the SID and push the SID wider over water as it tracks south. This would also cross 3x

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			STARs vs 1x STAR add traffic management complexity.
	Impact or benefit overall network efficiency	Impact	This change would trigger a large redesign of all approaches onto Runway 31 from the North to track inside the SID and push the SID wider over water as it tracks south. This would also cross 3x STARs vs 1x STAR add traffic management complexity. Would be reduced to a visual separation solution.
	Involve a cost	Yes	This suggestion would trigger the RWY 31 STARs to be redesign.
	Have a benefit appropriate to the cost	No	This change would concentrate aircraft noise on the SID TAPET ONE RWY 31. This change is expected to impact operational efficiency and have significant flow on effects to network efficiency.

Assessment outcome: *The suggestion to remove SID MOOLO ONE RWY 31 will not progress for further assessment due to impact on community, operational efficiency, and significant flow on network impact.*

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C.1.21 Increased usage of SID TAPET ONE RWY 31, instead of SID MOOLO ONE RWY 31



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	The SID MOOLO ONE RWY 31 is the SID used for departures to the East and South. If aircraft were to depart via SID TAPET ONE RWY 31 and turn East and South on completion, it would increase ATC tactical workload.
Is the change flyable and efficient	Increase track miles for industry (impacting emissions and operational cost)	Yes	On average there is an additional 16nm in track miles using a southern turn via TAPET as opposed to the using SID MOOLO per departure. Aircraft use the SID MOOLO ONE RWY 31 to depart from Runway 31 for destinations to the East and South. By flying the SID TAPET ONE RWY 31,

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			aircraft would have to track significantly further north before heading south.
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	No	1,400 population under RWY31 MOOLO SID. 2,100 population under RWY31 TAPET SID. Will reduce the number of aircraft over the communities under the RWY 31 MOOLO SID, however will transfer aircraft operations to the communities under the RWY31 TAPET SID. This will increase the number of exposed population by 700 per departure and increase the number of departures to three on an average day for communities under the RWY31 TAPET SID. Currently, RWY31 TAPET is only used a few times a week.
	Affect new communities	No	This suggested change will shift the operations over Cooroibah and Noosa North Shore, these communities currently have RWY13 RNP Z arrivals.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	Removal of the RWY31 MOOLO SID will concentrate aircraft over the longer RWY31 TAPET SID and new departure flight path south.
	Result in greater track miles for industry (and thus greater emissions)	Yes	On average there is an additional 16nm in track miles using a southern turn via TAPET as opposed to the using SID MOOLO per departure. This results in an additional 93kg of fuel burn and 290kg of CO2 emissions per departure. (Depending on type of aircraft).
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Noosa River Wetlands and Coolum Creek and Lower Maroochy River and within a buffer zone for the Great Sandy Straight RAMSAR Wetlands.
	Impact areas of future residential development or areas of high tourism value	No	This suggested change affects existing procedures. No new flight paths.
	Network	Have flow on effects or require changes to other	Yes

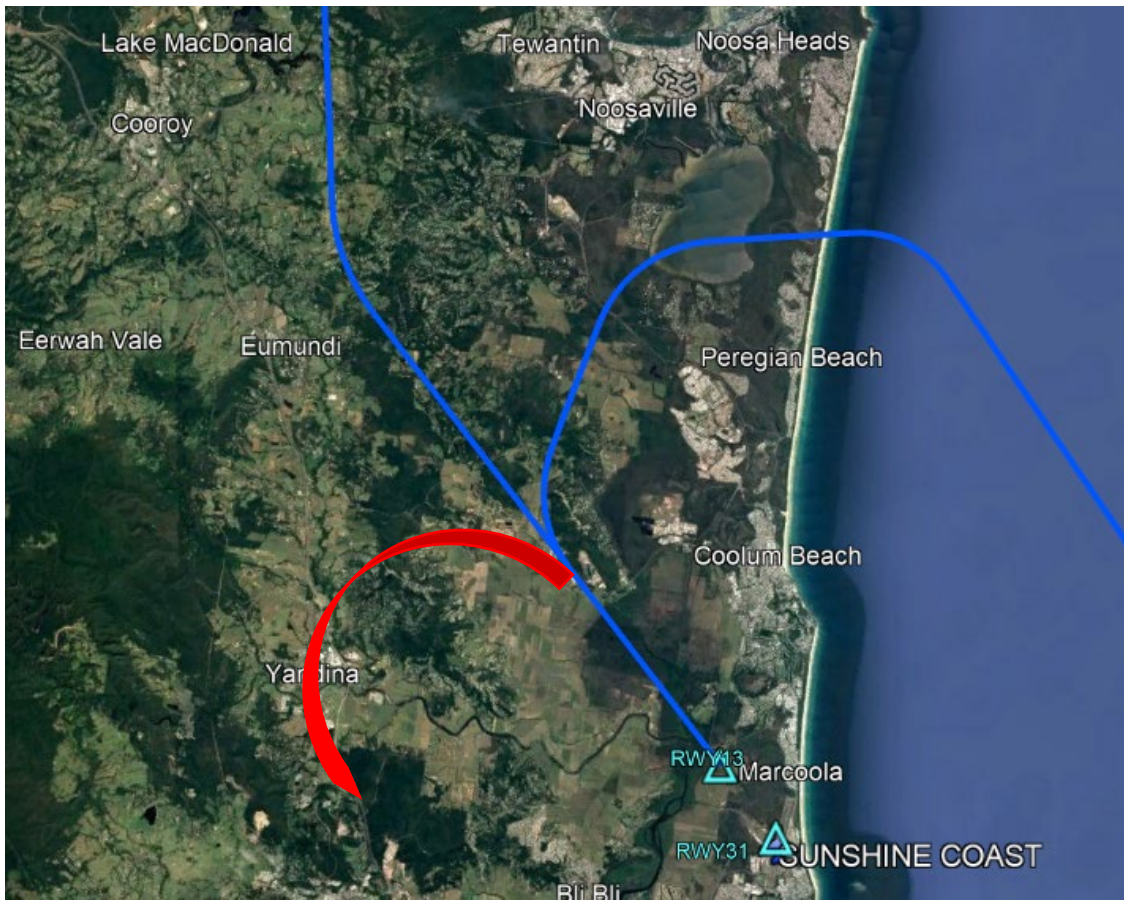
Assessment Criteria	Does the change?	Assessment Outcome	Justification
	procedures or flight paths		and push the SID wider over water as it tracks south. This would also cross 3x STARs vs 1x STAR add traffic management complexity.
	Impact or benefit overall network efficiency	Impact	This change would trigger a large redesign of all approaches onto Runway 31 from the North to track inside the SID and push the SID wider over water as it tracks south. This would also cross 3x STARs vs 1x STAR add traffic management complexity.
	Involve a cost	Yes	This suggestion would trigger the RWY 31 STARs to be redesign.
	Have a benefit appropriate to the cost	No	This change would concentrate aircraft noise on the SID TAPET ONE RWY 31. This change is expected to impact operational efficiency and have significant flow on effects to network efficiency.

Assessment outcome: The suggestion to increase the usage of SID TAPET ONE RWY 31, instead of SID MOOLO ONE RWY 31 is best achieved through NAPs.

This suggestion will not progress for further assessment due to impact on community, operational efficiency, and significant flow on network impact.

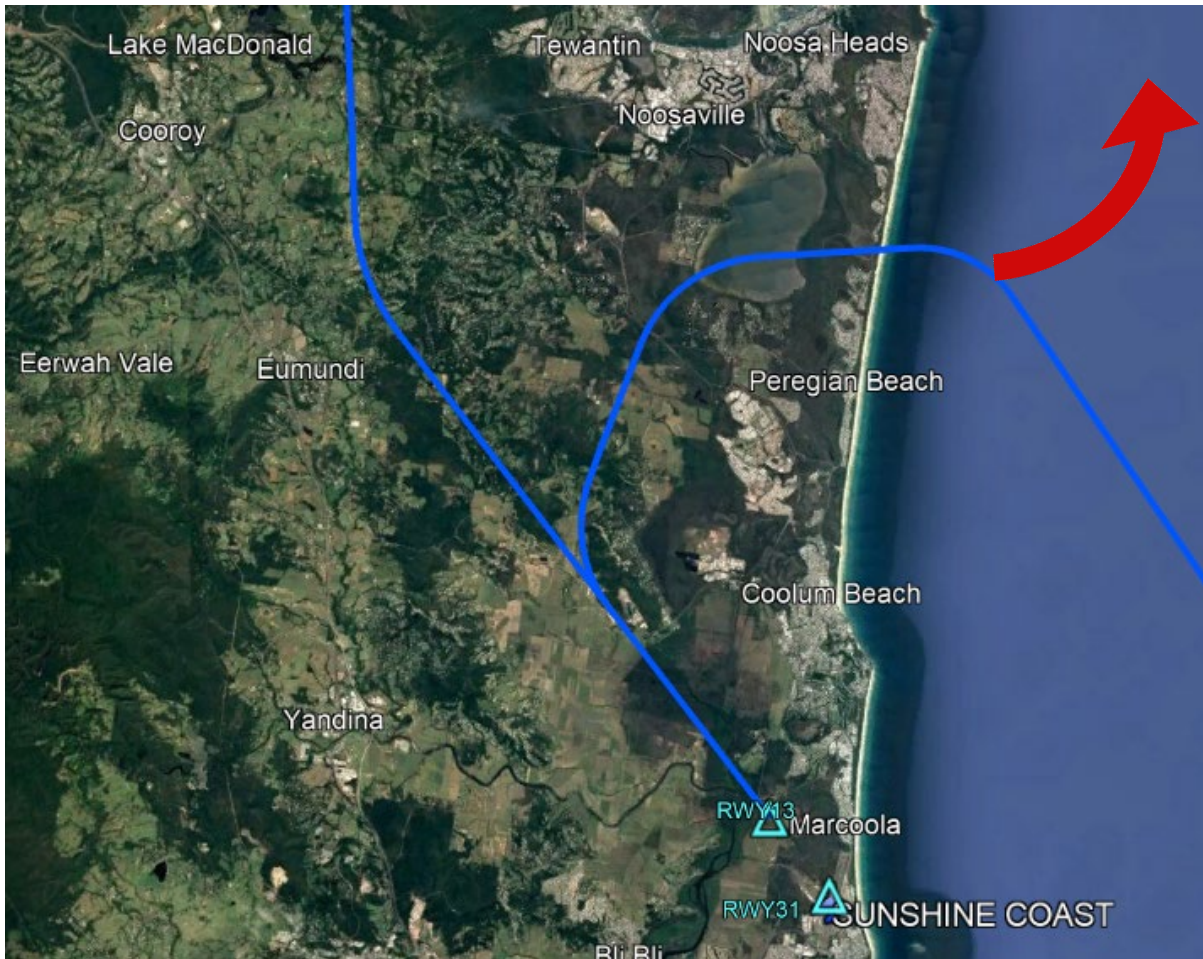
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C.1.22 Move the SID MOOLO ONE RWY 31 to turn left to the south of the airport over land / Maroochy River



Assessment outcome: *The suggestion to move the SID MOOLO ONE RWY 31 to the south, over land / Maroochy River is constrained by Brisbane operations. Through the PIR for the Brisbane New Parallel Runway Flight Paths, Airservices will look for ways optimise the performance of the wider Brisbane Airspace system. Airservices will revisit this suggested alternative during Brisbane works.*

C.1.23 Introduce a northern turn (once coast is cleared) on the SID MOOLO ONE RWY 31



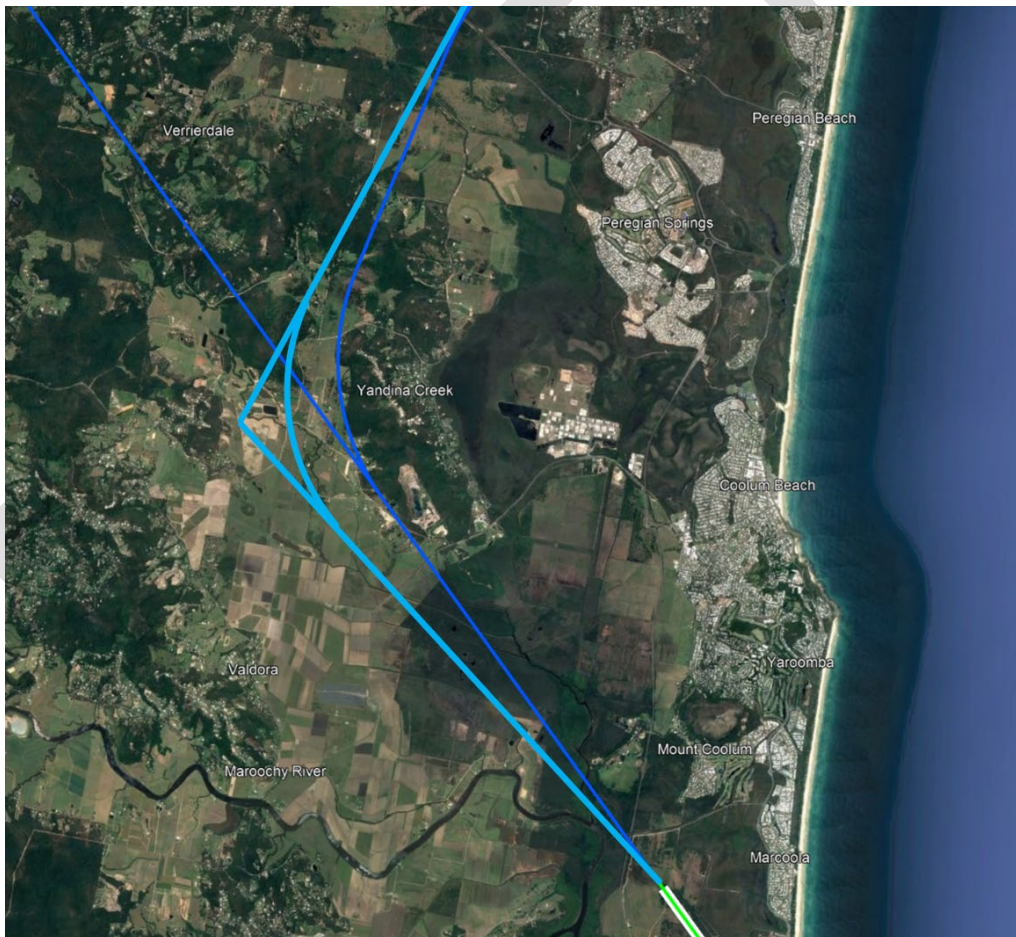
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Significant redesign would be required to ensure the proposal is safe and compliant.
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	To take aircraft off the SID TAPET ONE RWY 31 and have them on the concept SID MOOLO ONE RWY 31 with a turn off the coast to the north would have safety and vertical conflict issues with arrivals from the north tracking for RWY31 arrival. This would introduce human factor complexity/consideration.
	Increase track miles for industry (impacting emissions and operational cost)	No	No material difference.
Environmental	Reduce noise levels or the	Yes	1,400 population under RWY31 MOOLO SID.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Is the change environmentally appropriate?	number of people impacted		2,100 population under RWY31 TAPET SID. Will reduce the number of aircraft over the communities under the RWY31 TAPET SID, however will transfer aircraft operations to the communities under the RWY31 MOOLO SID. This will decrease the number of exposed population by 700 per departure, it will largely have negligible differences as only a few operations per week currently use the RWY31 TAPET SID.
	Affect new communities	No	This suggested change utilises existing procedures. No new flight paths over land.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	Decrease of the RWY31 TAPET SID will concentrate aircraft over the RWY31 MOOLO SID flight path.
	Result in greater track miles for industry (and thus greater emissions)	No	No material difference.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change utilises existing procedures out to the ocean. No new flight paths over land.
	Impact areas of future residential development or areas of high tourism value	No	This proposed change occurs over water.
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	The change would have safety and separation issues and would require a redesign of arrivals from the north tracking for RWY 31.
	Impact or benefit overall network efficiency	Impact	The change would have safety and separation issues and would require a redesign of arrivals from the north tracking for RWY 31.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			training) for the amended instrument procedure.
	Have a benefit appropriate to the cost	No	This change is expected to impact operational efficiency and have significant flow on effects to network efficiency. This change would concentrate aircraft noise on the SID MOOLO ONE RWY 31.

Assessment outcome: The suggestion to introduce a northern turn (once coast is cleared) on the SID MOOLO ONE RWY 31 will not progress for further assessment due to impacts on the community, operational efficiency, and significant flow on network impact.

C.1.24 Rotate the SID MOOLO ONE RWY 31 to the south, to track aircraft over cane fields



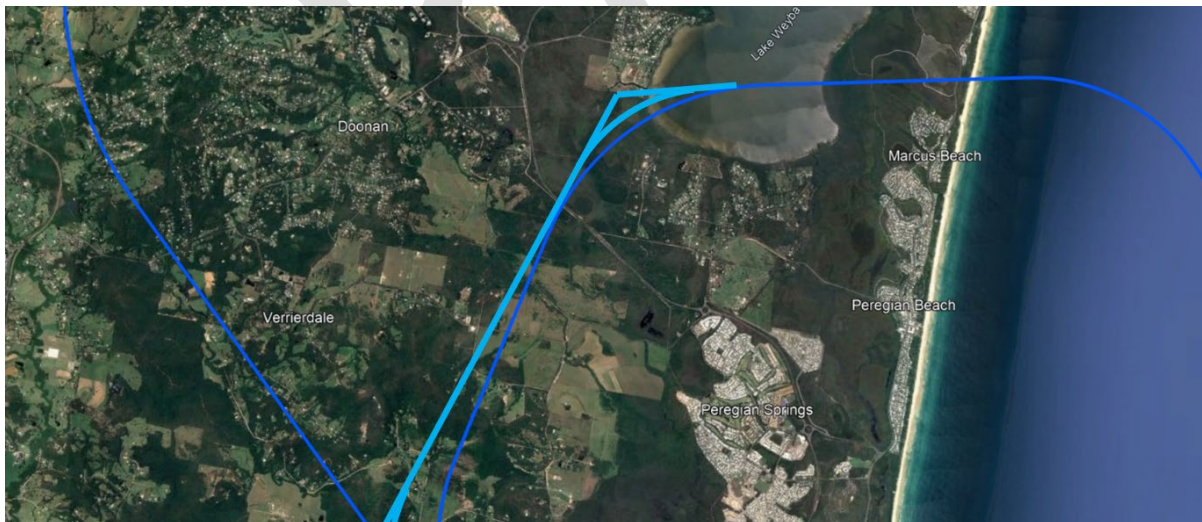
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	No	<p>No impact to complexity of operations.</p> <p>A turn shortly after departure has the potential to degrade climb performance.</p>
	Increase track miles for industry (impacting emissions and operational cost)	No	No material difference.
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	Yes	<p>1,400 population under the existing RWY31 MOOLO SID.</p> <p>1,300 population under the suggested RWY31 MOOLO SID.</p> <p>Will remove aircraft over the communities under the existing RWY31 MOOLO SID, however will transfer aircraft operations to the communities under the suggested flight path.</p> <p>The suggested adjustment of the RWY31 MOOLO SID to initially rotate the track over the cane fields and further north over lake Weyba will reduce the exposed population by 100 per departure.</p>
	Affect new communities	Yes	This suggested change will shift the track towards Doonan, Maroochy River, Valdora, Ninderry, Country Coolum, Yandina, North Arm, Bridges and North Arm
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The suggested change will only transfer aircraft operations from the existing RWY 31 SID MOOLO ONE.
	Result in greater track miles for industry (and thus greater emissions)	No	No material difference.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Lake Weyba and Coolum Creek and Lower Maroochy River. This is currently overflowed by the existing RWY13 RNP W (AR).

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Impact areas of future residential development or areas of high tourism value	No	We have not identified areas of future residential development or areas of high tourism value.
	Have flow on effects or require changes to other procedures or flight paths	No	No flow on effects or requirement to change other procedures or flight paths.
Network	Impact or benefit overall network efficiency	Impact	May introduce operational delays to RPT operations.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for the new instrument procedure.
	Have a benefit appropriate to the cost	Yes	May provide benefit to the community

Assessment outcome: *The suggestion to offset the SID MOOLO ONE RWY 31 over vacant cane fields to the south of the current SID track will progress for further investigation.*

C.1.25 Adjust the SID MOOLO ONE RWY 31 arc further north over Lake Weyba



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant.

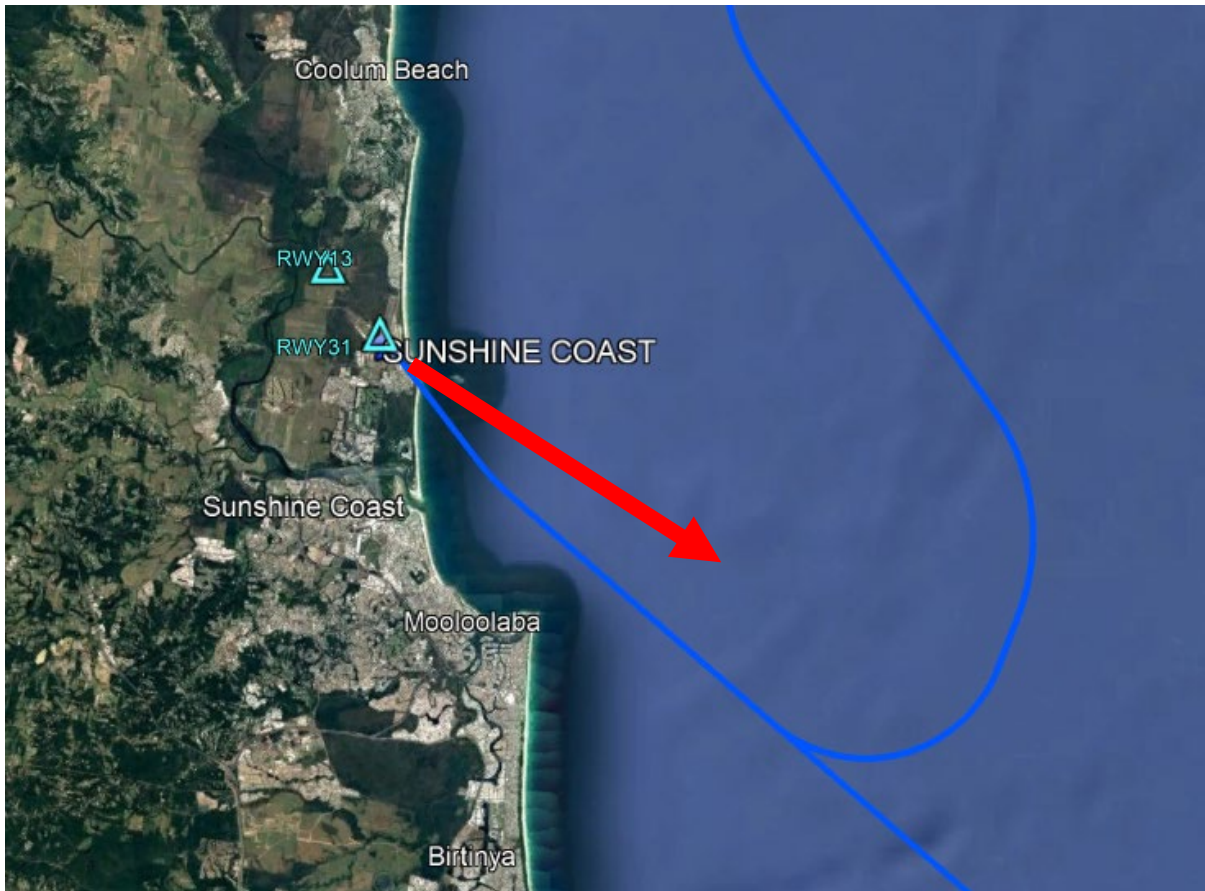
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	No	No increase to complexity to operations
	Increase track miles for industry (impacting emissions and operational cost)	No	No material difference.
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	Yes	1,400 population under the existing RWY31 MOOLO SID. 1,300 population under the suggested RWY31 MOOLO SID. Will remove aircraft over the communities under the existing RWY31 MOOLO SID, however will transfer aircraft operations to the communities under the suggested flight path. The suggested adjustment of the RWY31 MOOLO SID to initially rotate the track over the cane fields and further north over lake Weyba will reduce the exposed population by 100 per departure.
	Affect new communities	No	This suggested change will shift the track towards Doonan.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The suggested change will only transfer aircraft operations from the existing RWY 31 SID MOOLO ONE.
	Result in greater track miles for industry (and thus greater emissions)	No	No material difference.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Lake Weyba and Coolum Creek and Lower Maroochy River. This is currently overflowed by the existing RWY13 RNP W (AR).

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Impact areas of future residential development or areas of high tourism value	No	We have not identified areas of future residential development or areas of high tourism value.
	Have flow on effects or require changes to other procedures or flight paths	No	Will not have and flow on effects or require changes to other procedures or flight paths.
Network	Impact or benefit overall network efficiency	N/A	No impact or benefit to network efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for a new instrument procedure.
	Have a benefit appropriate to the cost	Yes	May provide benefit to the community

Assessment outcome: The suggestion to adjust the SID MOOLO ONE RWY 31 arc further north over Lake Weyba will progress for further investigation.

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C.1.26 Rotate the SID TAPET ONE RWY 13 to the north, to track aircraft east over the ocean

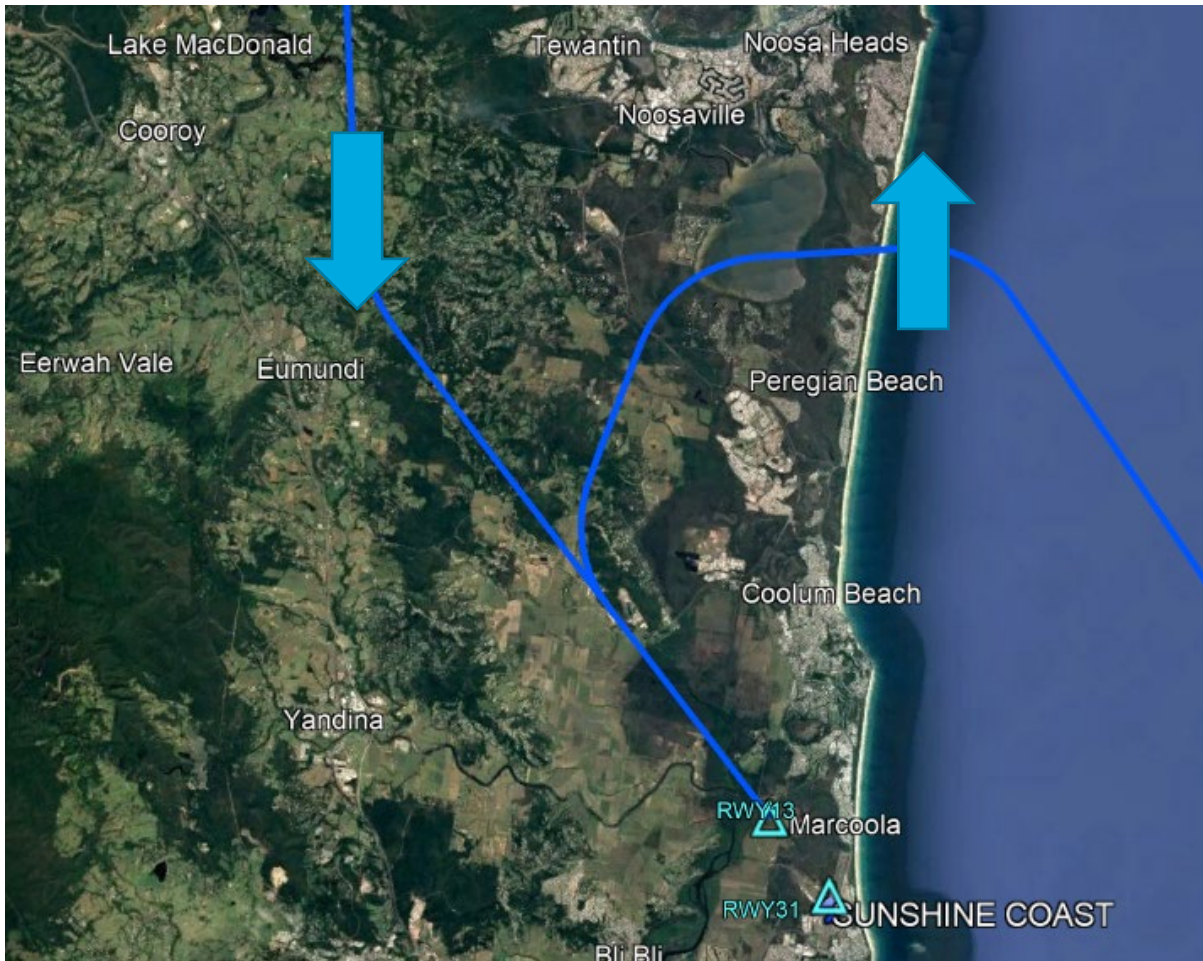


Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Significant redesign would be required to ensure the proposal is safe and compliant.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	Significantly increase complexity for ATC to separate the SID TAPET ONE RWY 13 from the SID MOOLO ONE RWY 13 by introducing a track crossover.
Is the change flyable and efficient	Increase track miles for industry (impacting emissions and operational cost)	No	No material differences.
Environmental	Reduce noise levels or the number of people impacted	No	No material differences.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Is the change environmentally appropriate?			This suggested change closely utilises existing procedures and is a short distance from the airport to overwater. A turn shortly after departure has the potential to degrade climb performance.
	Affect new communities	No	The change will likely still impact the same communities.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The change will likely still impact the same communities.
	Result in greater track miles for industry (and thus greater emissions)	No	No material differences.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change closely utilises existing procedures and is a short distance from the airport to overwater.
	Impact areas of future residential development or areas of high tourism value	No	This change is over water.
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	This change would require RWY 13 redesign (SIDs/STARs impacted). Significant increase to track miles of impacted procedures.
	Impact or benefit overall network efficiency	Impact	Significant loss in efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for the new instrument procedure.
	Have a benefit appropriate to the cost	No	This change is expected to offer negligible benefit to the community with significant impact to operational efficiency with flow on effects to the network.

Assessment outcome: *The suggestion to rotate the SID TAPET ONE RWY 13 to the north, to track aircraft east over the ocean will not progress for further assessment due to the negligible benefit to the community and impact on operational efficiency/flow on network impacts.*

C.1.27 Increased usage of SID MOOLO ONE RWY 31, instead of SID TAPET ONE RWY 31



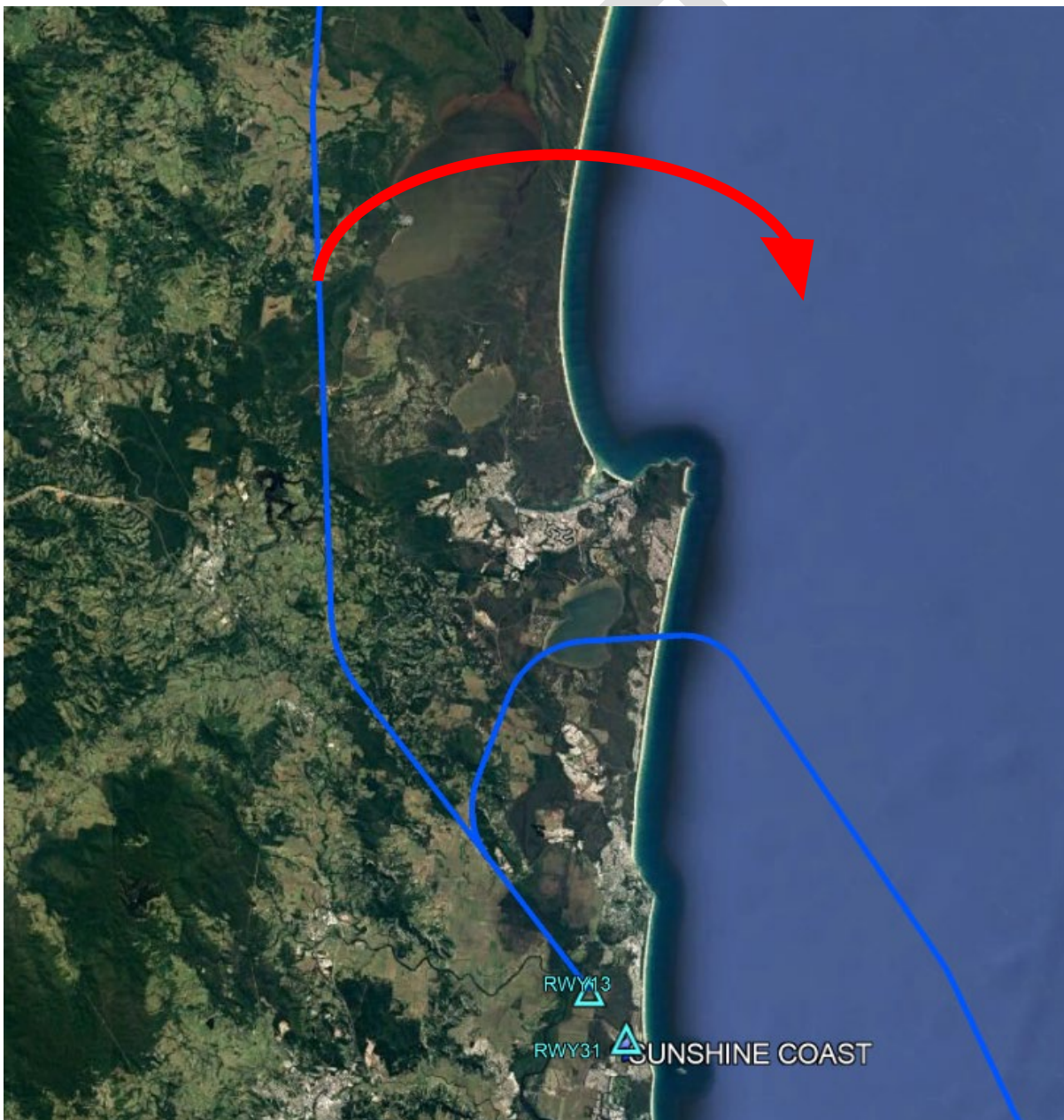
Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Significant redesign would be required to ensure the proposal is safe and compliant.
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	To take aircraft off the SID TAPET ONE RWY 31 and increase the use of the SID MOOLO ONE RWY 31 with a turn off the coast to the north would have safety and vertical conflict issues with arrivals from the north tracking for RWY31 arrival.
	Increase track miles for industry (impacting emissions and operational cost)	No	No material difference.
Environmental	Reduce noise levels or the	Yes	1,400 population under RWY31 MOOLO SID.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Is the change environmentally appropriate?	number of people impacted		<p>2,100 population under RWY31 TAPET SID.</p> <p>Will reduce the number of aircraft over the communities under the RWY31 TAPET SID, however will transfer aircraft operations to the communities under the RWY31 MOOLO SID.</p> <p>This will decrease the number of exposed population by 700 per departure, it will largely have negligible differences as only a few operations per week currently use the RWY31 TAPET SID flight path.</p>
	Affect new communities	No	This suggested change utilises existing procedures. No new flight paths over land.
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	Decrease of the RWY31 TAPET SID will concentrate aircraft over the RWY31 MOOLO SID flight path.
	Result in greater track miles for industry (and thus greater emissions)	No	No material difference.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change utilises existing procedures out to the ocean. No new flight paths.
	Impact areas of future residential development or areas of high tourism value	No	This suggested change affects existing procedures. No new flight paths.
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	The change would have safety and separation issues and would require a redesign of arrivals from the north tracking for RWY 31.
	Impact or benefit overall network efficiency	Impact	The change would have safety and separation issues and would require a redesign of arrivals from the north tracking for RWY 31.
	Involve a cost	No	No change to existing flight paths.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Have a benefit appropriate to the cost	No	This change is expected to impact operational efficiency and have significant flow on effects to network efficiency. This change would concentrate aircraft noise on the SID MOOLO ONE RWY 31.

Assessment outcome: The suggestion to increase the usage of SID MOOLO ONE RWY 31, instead of SID TAPET ONE RWY 31 is best achieved through NAs. This proposal will not progress for further assessment due to impacts on the community, operational efficiency, and significant flow on network impact.

C.1.28 Introduce a southern turn on the SID TAPET ONE RWY 31

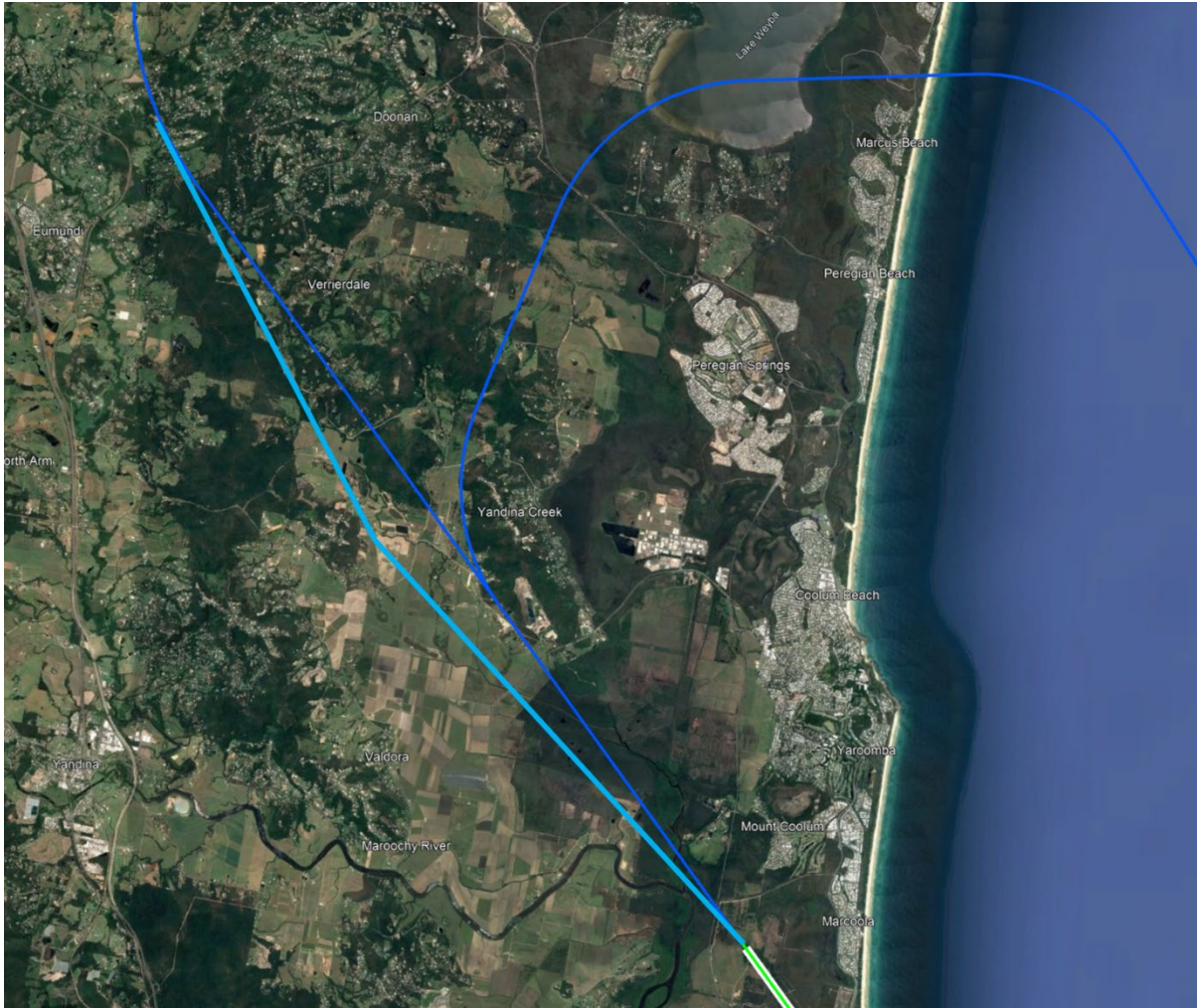


Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Significant redesign would be required to ensure the proposal is safe and compliant.
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	This proposed change would conflict with existing STAR tracks from the North, triggering a redesign for RWY 31 operations.
	Increase track miles for industry (impacting emissions and operational cost)	Yes	On average there is an additional 16nm in track miles using a southern turn via TAPET as opposed to the using SID MOOLO per departure.
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	No	1,400 population under RWY31 MOOLO SID.
			2,100 population under RWY31 TAPET SID.
	Affect new communities	No	Will remove the number of aircraft over the communities under the RWY31 MOOLO SID, however will transfer aircraft operations to the communities under the RWY31 TAPET SID. This will increase the number of exposed population by 700 per departure and increase the number of arrivals to three on an average day for communities under the RWY31 TAPET SID flight path. Currently, RWY 31 TAPET is used a few times a week.
			This suggested change will shift operations over Cooroibah and Noosa North Shore, these communities currently have RWY13 RNP Z arrivals.
Better share the impact of noise in keeping with our Flight Path Design Principles	No	Removal of the RWY31 MOOLO SID will concentrate aircraft over the longer RWY31 TAPET SID and new departure flight path south.	
Result in greater track miles for industry (and thus greater emissions)	Yes	On average there is an additional 16nm in track miles using a southern turn via TAPET as opposed to the using SID MOOLO per departure. This results in an additional 93kg of fuel burn and	

Assessment Criteria	Does the change?	Assessment Outcome	Justification
			290kg of CO2 emissions per departure. (Depending on type of aircraft).
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Noosa River Wetlands and Coolum Creek and Lower Maroochy River and within a buffer zone for the Great Sandy Straight RAMSAR Wetlands.
	Impact areas of future residential development or areas of high tourism value	No	We have not identified areas of future residential development or areas of high tourism value.
Network	Have flow on effects or require changes to other procedures or flight paths	Yes	The change would have safety and separation issues with arrivals from the north tracking for RWY31 arrival. Consequential significant additional track miles on updated RWY 31 STARs to deconflict with concept SID TAPET ONE RWY 31 with southern turn.
	Impact or benefit overall network efficiency	Impact	Loss of efficiency and impact to other procedures.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for the amended instrument procedure.
	Have a benefit appropriate to the cost	No	This change would concentrate aircraft noise on the SID TAPET ONE RWY 31. This change is expected to impact operational efficiency and have significant flow on effects to network efficiency.

Assessment outcome: The suggestion to introduce a southern turn on the SID TAPET ONE RWY 31 will not progress for further assessment due to impact on community, operational efficiency, and significant flow on network impact.

C.1.29 Rotate the SID TAPET ONE RWY 31 to the south, to track aircraft over cane fields



Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and compliant.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	No	No impact to complexity of operations. A turn shortly after departure has the potential to degrade climb performance.
Is the change flyable and efficient	Increase track miles for industry (impacting emissions and operational cost)	No	No material difference.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Environmental Is the change environmentally appropriate?	Reduce noise levels or the number of people impacted	Yes	<p>2,100 population under the existing RWY31 TAPET SID.</p> <p>2,000 population under the suggested RWY31 TAPET SID.</p> <p>Will remove aircraft over the communities under the existing RWY31 TAPET SID, however will transfer aircraft operations to the communities under the suggested flight path.</p> <p>The suggested adjustment of the RWY31 TAPET SID to initially rotate the track over the cane fields will reduce the exposed population by 100 per departure.</p>
	Affect new communities	Yes	This suggested change will shift the track towards Maroochy River, Valdora, Ninderry, Country Coolum, Yandina, North Arm, Bridges and North Arm
	Better share the impact of noise in keeping with our Flight Path Design Principles	No	The suggested change will only transfer aircraft operations from the existing RWY 31 SID TAPET ONE.
	Result in greater track miles for industry (and thus greater emissions)	No	No material difference.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change will overfly Coolum Creek and Lower Maroochy River and within a buffer zone for the Great Sandy Straight RAMSAR Wetlands.
	Impact areas of future residential development or areas of high tourism value	No	We have not identified areas of future residential development or areas of high tourism value.
	Network	Have flow on effects or require changes to other procedures or flight paths	No
Impact or benefit overall network efficiency		Impact	May introduce operational delays to RPT operations.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for the new instrument procedure.
	Have a benefit appropriate to the cost	Yes	May provide benefit to the community

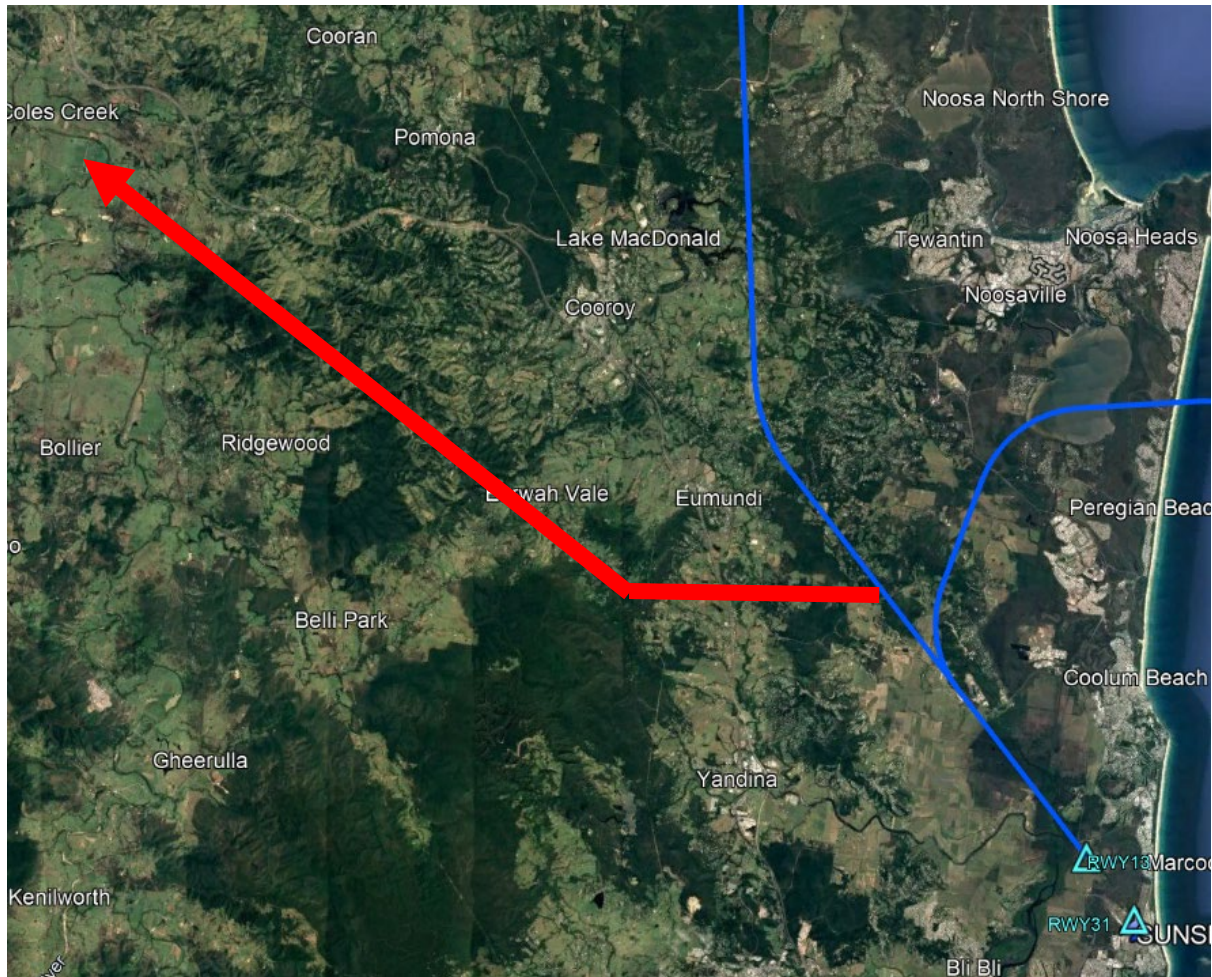
Assessment outcome: *The suggestion to offset the SID TAPET ONE RWY 31 over vacant cane fields to the south of the current SID track will progress for further investigation.*

C.1.30 Create a Southwest Departure from RWY 31



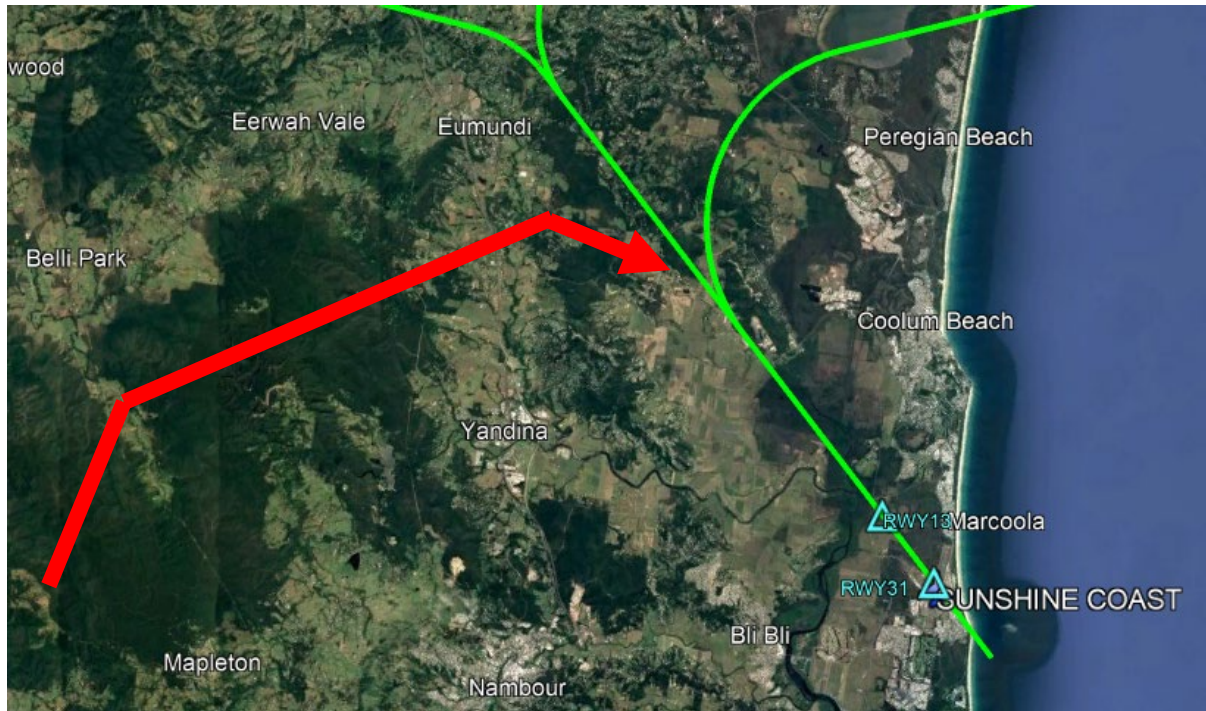
Assessment outcome: *The suggestion to create a Southwest Departure from RWY 31 is constrained by Brisbane operations. Through the PIR for the Brisbane New Parallel Runway Flight Paths, Airservices will look for ways optimise the performance of the wider Brisbane Airspace system. Airservices will revisit this suggested alternative during Brisbane works.*

C.1.31 Create a Northwest Departure for RWY 31



Assessment outcome: *The suggestion to create a Northwest Departure for RWY 31 is constrained by Brisbane operations. Through the PIR for the Brisbane New Parallel Runway Flight Paths, Airservices will look for ways optimise the performance of the wider Brisbane Airspace system. Airservices will revisit this suggested alternative during Brisbane works.*

C.1.32 Create a RNP-AR approach for RWY 13 from the West



Assessment outcome: The suggestion to create a RNP-AR approach for RWY 13 from the West is constrained by Brisbane operations. Through the PIR for the Brisbane New Parallel Runway Flight Paths, Airservices will look for ways to optimise the performance of the wider Brisbane Airspace system. Airservices will revisit this suggested alternative during Brisbane works.

C.1.33 No new flight paths over the Sunshine Coast hinterland

Multiple suggestions were made to avoid new flight paths over the Sunshine Coast Hinterland.

Flight paths are constrained by the location of an airport and the orientation of the runway(s), the local weather and meteorological conditions, the natural and/or urban terrain, aircraft performance and/or navigation capability, or the existing air traffic network and airspace architecture. Aircraft noise is an inevitable by-product of aircraft operations, and it is not possible to guarantee any suburb, group, or individual exemption from aircraft noise exposure.

Airservices considers flight path designs that distribute aircraft operations and noise across multiple areas.

Assessment outcome: This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment. See A.2.2.

APPENDIX D – COMMUNITY SUGGESTED NAPS IMPROVEMENTS

Community Suggested Improvements

The PIR included a formal engagement period for community suggested alternatives for the current NAPs, from 20 July 2021 to 26 September 2021.

All submissions received were accepted. A total of 76 submissions were received throughout the submission period.

Several submissions received during the formal engagement period were complaints or primarily related to the use of alternative flight paths, which have been captured in the themes in the community suggested alternative flight paths section of this report.

Submissions were reviewed and consolidated into 10 suggested alternatives.

Summary of Community Suggested Alternative Assessments:

1. Implement curfew
2. Reverse the current preferred runways
3. No change to current preferred runways
4. Steeper departures
5. Steeper approaches
6. No intersection departures
7. Restriction on pilot training (circuit hours, specific training activities)
8. Specific helicopter arrival and departure channels, avoiding residential areas
9. Remove 5700KG weight limitation on current NAPs
10. Monitor NAP adherence

Assessment of Community Suggested Improvements

D.1.1 Implement Curfew

Multiple suggestions were made to implement a strict curfew to stop early morning and late-night flights at Sunshine Coast Airport.

Assessment outcome: *Airservices is not responsible for implementing curfews at Australian airports.*

D.1.2 Reverse the current preferred runways

Multiple suggestions were made to reverse the current “Preferred Runway” for jet aircraft of Landing – RWY 31, Take-off – RWY 13. During tower hours, the runway is selected by air traffic control, in line with conditions outlined in the Manual of Air Traffic Services, and with consideration of the NAPs. There are several considerations/limitations on runway selection (i.e., Runway conditions, wind velocity, disposition of traffic). Outside of air traffic control tower hours, the runway is selected by the pilot in command, with consideration of the NAPs. Airservices recognises that although the current preferred runway NAP maximises operations over ocean, this also subjects the Mudjimba community to aircraft operations that are in the early stages of departure and final stages of arrival. Reversing the preferred runway would subject significantly more communities to aircraft operations at varying heights.

Assessment outcome: Airservices recommends further investigation is conducted to remove the Preferred Runways section within the Sunshine Coast Airport NAPS.

D.1.3 No change to current preferred runways

Multiple suggestions were made to retain the current “Preferred Runway” for jet aircraft of Landing – RWY 31, Take-off – RWY 13. During tower hours, the runway is selected by air traffic control, in line with conditions outlined in the Manual of Air Traffic Services, and with consideration of the NAPS. There are several considerations/limitations on runway selection (i.e., Runway conditions, wind velocity, disposition of traffic). Outside of air traffic control tower hours, the runway is selected by the pilot in command, with consideration of the NAPS. Airservices recognises that although the current preferred runway NAP maximises operations over ocean, this also subjects the Mudjimba community to aircraft operations that are in the early stages of departure and final stages of arrival.

Assessment outcome: Airservices recommends further investigation is conducted to remove the Preferred Runways section within the Sunshine Coast Airport NAPS.

D.1.4 Steeper departures

Multiple suggestions were made to increase the climb gradient of aircraft operating out of Sunshine Coast airport. The current NAP was a result of community and industry consultation and requires all departing jet aircraft to comply with a 7 percent climb gradient to 6000ft, except if the SID cancelled by ATC at pilot request due weather. An increase above 7 percent carries the risk of operators rejecting the departure via SID and having to fly a lower climb gradient due to aircraft performance. Aircraft operate more efficiently at higher altitudes, therefore aircraft operators will typically preference a steep departure.

Assessment outcome: The current climb gradient was introduced through consultation with industry and community. Increasing the climb gradient may lead to an increase in circumstances where an operator cannot accept a departure via the SID. This suggestion is not recommended to progress for further assessment.

D.1.5 Steeper arrivals

Multiple suggestions were made to keep flights higher on arrival, by increasing the glide path angle of descent of aircraft arriving into the Sunshine Coast airport. To conduct a safe and stable approach, aircraft typically fly a 3° glide path angle of descent. Airservices has recently conducted analysis demonstrating that in isolation, the implementation of a slightly steeper approach angle would only increase the altitude of aircraft slightly with no discernible changes to aircraft noise when approximately 8km from the runway.

Assessment outcome: The suggestion to keep flights higher on arrival, by increasing the glide path angle of descent is not recommended to progress for further assessment due to the reduction in safety with no discernible benefits to the community.

D.1.6 No intersection departures

Suggestions were made to restrict aircraft from conducting intersection departures. An intersection departure is a take-off that starts at a position different than the beginning of a runway. The only opportunity to conduct an intersection departure at Sunshine Coast airport is via TWY A2. The current NAP states that jet aircraft must not conduct an intersection departure from TWY A2. Trials conducted at Brisbane Airport restricting the use of intersection departures have found that the suggestion to restrict intersection departures results in a noise change in the order of 1 decibel (in either direction). This level of noise is not considered an audible change in accepted acoustic standards.

Assessment outcome: *The suggestion to restrict intersection departures is not recommended to progress as a NAP to restrict intersection departures already exists. Furthermore, a recent trial conducted at Brisbane Airport had no discernible noise improvements.*

D.1.7 Restriction on pilot training (circuit hours, specific training activities)

Suggestions were made to restrict pilot training activity at Sunshine Coast airport, specifically noting strict training circuit hours and limitations on specific training activities (i.e., practice engine failures after take-off). The En Route Supplement Australia (ERSA) outlines local traffic regulations for training flights. All aircraft planning practice instrument approaches and navigational aid training require ATC approval, pilots are required to book a slot through an online air work booking system. Similarly, all aircraft circuit training requires ATC approval and a slot in the air work booking system. Circuit training is currently limited to the hours between 7:00AM and 10:00PM. Airservices must ensure that the Sunshine Coast airspace is equitable, meeting the needs of aviation industry stakeholders. Restricting the hours and types of training activities will significantly impact the training providers that utilise Sunshine Coast Airport.

Assessment outcome: *The suggestion to place restrictions on pilot training operations (circuit hours, specific training activities) is not recommended to progress due to the industry impact. However, Airservices and Sunshine Coast Airport regularly meets with training operators at Sunshine Coast airport and will raise this concern to determine if there are any alternatives to lessen the impact to community.*

D.1.8 Specific helicopter arrival and departure channels, avoiding residential areas

The introduction of specific helicopter arrival and departure channels would impact operational safety and efficiency by minimising sequencing opportunities, introducing points of potential conflict, and introducing additional track miles. The introduction of arrival and departure channels also increases the concentration of aircraft operations, which can be experienced by communities on the fringe of a lower populated area/location. Restricting helicopter operations to specific channels will significantly impact the training providers that utilise Sunshine Coast Airport, Airservices must ensure that the Sunshine Coast airspace is equitable, meeting the needs of aviation industry stakeholders.

Assessment outcome: *The suggestion to introduce specific helicopter arrival and departure channels is not recommended to progress due to operational/safety impact and the impact on community and industry. However, Airservices and Sunshine Coast regularly meets with training operators at Sunshine Coast airport and will raise this concern to determine if there are any alternatives to lessen the impact to community.*

D.1.9 Remove the 5700KG weight limitation on NAPs

Suggestions were received to remove the 5700KG weight limitation within the current NAPs. It currently applies to two NAPs:

1. Preferred flight paths for aircraft above 5700KG – where possible all arriving and departing aircraft to track via SIDs and STARs.
 - Aircraft under 5700KG are generally operating under visual flight rules (VFR). SIDs and STARs can only be flown by aircraft operating under instrument flight rules (IFR). VFR aircraft are not required to follow IFR flight paths.
2. Aircraft above 5700KG operating between 2300 and 0530 hours local time, require prior approval from Sunshine Coast Airport Pty Ltd.
 - This NAP is outside of Airservices remit.

Assessment outcome: *The suggestion to remove the current weight limitation on the preferred flight path NAP is not recommended to progress as aircraft below 5700kg are generally operating under*

VFR and are not required to follow IFR flight paths. The NAP concerning operations between 2300 and 0530 hours is outside of Airservices remit.

D.1.10 Monitor NAP adherence

Suggestions were received for Airservices to monitor NAPs adherence.

Monitoring of NAP adherence can provide the opportunity to identify and address any recurring instances of the NAPs not being applied and may provide learnings and ongoing improvement opportunities.

Assessment outcome: Airservices is currently investigating ways to expand our Aircraft In Your Neighbourhood website to include, where possible, NAP adherence reporting.

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APPENDIX E – INDUSTRY SUGGESTED IMPROVEMENTS

Airservices sought feedback from industry throughout the PIR. Six industry suggested flight path improvements and one NAP suggested improvement have been assessed using the same criteria that was applied to the community suggested alternatives.

Assessment of Industry Suggested Flight Path Improvements

E.1.1 Reduce the track distances of the SIDs and STARs

Track miles were kept to a minimum during design. They are increased over the procedures in place for the now decommissioned runway 18/36. However, with the new design came a full RNP1 solution, increasing airport safety and capacity with inbuilt procedural separation of SIDs and STARs, and adherence to the Environmental Impact Statement to best avoid community overflight.

Assessment Outcome: Any changes made during the PIR will consider this feedback and make improvements wherever possible.

E.1.2 Reduce the track distances associated with RWY13 RNP approaches

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	Due to separation with the RWY13 TAPET SID, and EIS compliance to overfly the least community/residential areas possible, the current design is optimal and cannot be shortened.

Assessment outcome: This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.

E.1.3 Reduce the ITIDE TWO ZULU ARRIVAL RWY 31 heading change for aircraft arriving from the South. The aircraft FMS will schedule the turn to commence approximately 5nm to run ITIDE

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	The turn is within traffic and operational management parameters.
Operational efficiency and feasibility Is the change flyable and efficient	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	No	No change to complexity of operations.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	Increase track miles for industry (impacting emissions and operational cost)	No	No material difference.
	Reduce noise levels or the number of people impacted	No	No material differences, this suggested change closely utilises existing procedures and is overwater.
	Affect new communities	No	No material differences, this suggested change closely utilises existing procedures and is overwater.
Environmental	Better share the impact of noise in keeping with our Flight Path Design Principles	N/A	This suggested change closely utilises existing procedures and is overwater.
Is the change environmentally appropriate?	Result in greater track miles for industry (and thus greater emissions)	No	No material difference.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change closely utilises existing procedures and is overwater.
	Impact areas of future residential development or areas of high tourism value	No	This suggested change closely utilises existing procedures and is overwater.
	Have flow on effects or require changes to other procedures or flight paths	No	No flow on effects or requirement to change other procedures or flight paths.
Network	Impact or benefit overall network efficiency	N/A	No impact or benefit to network efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for a new instrument procedure.
	Have a benefit appropriate to the cost	Yes	May provide benefit to industry.

Assessment Outcome: Adding an optional enhancement of a wider waypoint prior to ITIDE to reduce the change in heading at ITIDE, therefore reducing turn anticipation distance, will progress for further investigation.

E.1.4 Amend the location of waypoint NAVTO to be within RNP navigation requirements

Assessment Criteria	Does the change?	Assessment Outcome	Justification	
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and operationally compliant.	
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	No	No change to complexity of operations.	
Is the change flyable and efficient	Increase track miles for industry (impacting emissions and operational cost)	No	No material difference.	
Environmental	Reduce noise levels or the number of people impacted	No	No material differences, this suggested change closely utilises existing procedures and is overwater.	
	Affect new communities	No	No material differences, this suggested change closely utilises existing procedures and is overwater.	
	Better share the impact of noise in keeping with our Flight Path Design Principles	N/A	This suggested change closely utilises existing procedures and is overwater.	
	Is the change environmentally appropriate?	Result in greater track miles for industry (and thus greater emissions)	No	No material difference.
	Impact areas of national environmental significance and noise sensitive sites	No	This suggested change closely utilises existing procedures and is overwater.	
	Impact areas of future residential development or	No	This suggested change closely utilises existing procedures and is overwater.	

Assessment Criteria	Does the change?	Assessment Outcome	Justification
	areas of high tourism value		
Network	Have flow on effects or require changes to other procedures or flight paths	No	No flow on effects or requirement to change other procedures or flight paths.
	Impact or benefit overall network efficiency	N/A	No impact or benefit to network efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for a new instrument procedure.
	Have a benefit appropriate to the cost	Yes	May provide benefit to industry.

Assessment Outcome: A re-design of this section of the SID to improve the turn for the onboard aircraft FMS will progress for further investigation.

E.1.5 Realign airspace extending into the Mary River Valley (Kybong Airfield) to allow greater use of the airspace by other aviation users

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Yes	Safe and operationally compliant.
Operational efficiency and feasibility	Increase complexity to operations (the work of ATC in managing the air space or pilot workload in flying the flight path)	Yes	The introduction of an additional airspace step to facilitate this proposal may increase complexity for ATC and pilots.
	Is the change flyable and efficient	No	No change to flight paths.
Environmental	Reduce noise levels or the number of people impacted	No	No change to flight paths.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Is the change environmentally appropriate?	Affect new communities	No	No change to flight paths.
	Better share the impact of noise in keeping with our Flight Path Design Principles	N/A	No change to flight paths.
	Result in greater track miles for industry (and thus greater emissions)	No	No change to flight paths.
	Impact areas of national environmental significance and noise sensitive sites	No	No change to flight paths.
	Impact areas of future residential development or areas of high tourism value	No	No change to flight paths.
Network	Have flow on effects or require changes to other procedures or flight paths	No	Flights paths must remain contained within controlled airspace.
	Impact or benefit overall network efficiency	N/A	No impact or benefit to network efficiency.
	Involve a cost	Yes	Design, assessment, and implementation (including documentation amendments and ATC training) for new airspace.
	Have a benefit appropriate to the cost	Yes	May provide benefit to industry.

Assessment Outcome: Amending airspace steps to allow greater use of the airspace by other aviation users will progress for further investigation.

E.1.6 Realign the northwest airspace boundary further northeast for easier visual reference of the line from Gympie to Maroochydore.

Assessment Criteria	Does the change?	Assessment Outcome	Justification
Safety and Operational Compliance	Comply with international and national safety and design standards	Not safe and compliant	Airspace to the north-west of the airport is the minimum required to safely contain current Instrument Flight Procedures. There is no airspace that can be removed/released without significant changes to the procedures. Airspace infringements have now reduced to pre new runway levels.

Assessment outcome: *This suggestion does not meet Airservices safety and operational compliance assessment and will not progress for further assessment.*

Assessment of Industry Suggested NAP Improvements

E.1.7 Amend the NAP 2 (Preferred flight paths for aircraft above 5700kg) to exclude Runway 31 visual tracking to a final approach.

Visual procedures in general were not included at Sunshine Coast for predictability and noise abatement. However, this segment relates in part to overwater operations. There could potentially be a benefit in terms of reduced thrust settings which would improve noise outcomes.

Assessment outcome: *As this suggested improvement occurs over water and may improve noise outcomes for the community, it will proceed to further investigation.*

