



Post Implementation Review

GOLD COAST AIRPORT - Runway 14 southern departures trial

Version 1

Effective January 2016

Introduction

At the request of the community, Airservices commenced a 12-month trial on 8 January 2015 with the aim to reduce noise impacts for residents to the south of the Gold Coast Airport.

The proposed change was submitted to Airservices in 2012-13 by resident groups to the south of Gold Coast Airport. The trial modified the jet departure flight path to the south-west of the airport to maximise tracking over the Banora Point Golf Course. The change design process included regular discussion with community representatives to align the modified flight path as closely as possible to their expectations.

The trial was in place for 12 months in order to cover normal seasonal weather patterns. Noise monitoring was undertaken from mid-March to mid-June in four locations. Additional supplementary handheld monitoring was conducted at two locations for a short period. Data from these noise monitors was made publicly available and used to inform Airservices decision on whether to permanently implement the flight path change.

Other flight paths in the vicinity of the Banora Point Golf Course, whether for arriving or departing aircraft, remained in place unchanged and their use was not impacted by the trial in any way.

Trial objectives

Intended outcomes:

1. maximise tracking over Banora Point Golf Course
2. noticeable reduction in noise impacts for some areas (notably a five decibel (dBA) reduction at Chinderah as modelled prior to the trial) with no noise increase for any other area that would be intrusive.

Airservices pre-trial environmental assessment noted that the change being trialled might also result in a reduction in total population exposed to aircraft noise with a possible reduction of 500 persons living within the 70 dBA noise contour. This potential benefit was not included as an intended trial outcome.

Summary of environmental assessment

Prior to commencement of the trial, Airservices undertook an environmental assessment of the proposed change which is available at <http://www.airservicesaustralia.com/projects/flight-path-changes/gold-coast/>

The assessment noted the following:

Flight frequency

In 2013, 13 283 jets departed from Runway 14 at Gold Coast Airport. Of these, 10 228 (77 per cent) followed the APAGI SID¹ heading to destinations to the south and west of the airport (from Sydney across to Perth).

Of the 36 jet departures a day from Runway 14 in 2013, 28 on average used the APAGI flight path, ranging from nil to 60. It was anticipated there would be no change in the number of aircraft using this flight path as a result of the trial proposal.

Noise impact

The anticipated change in noise impact for residential areas located north of the Tweed River was considered minor and not likely to be noticeable, ranging from nil to +2 dBA.

For communities south of the Tweed River, it was expected there would be a reduction in aircraft noise. For Chinderah residents, this was anticipated to be a reduction of up to five decibel (dBA), a level considered to be noticeable.

It was anticipated there would be a noticeable increase in the noise level of aircraft flying over the Stotts Creek area, with some aircraft perceived as being twice as loud. However, it was noted this is a sparsely-populated rural area and any increase, while noticeable, may not be considered intrusive.

Emissions

No additional aircraft emissions were expected to result from the proposed realignment.

Natural environment

The proposed change to the flight path did not expose any new areas of natural environment significance to aircraft overflight or noise.

Total population exposed to aircraft noise

The Environmental Assessment anticipated a reduction in the total number of people within the 60 and 70 dBA noise contours (maximum noise level of a single aircraft overflight). The assessment noted there may be a decrease in the total number of persons exposed to 5-20 noise events above 60 dBA and noise events of 70 dBA or greater on an average day. As this was not a trial objective, no analysis of this was undertaken at the conclusion of the trial.

Summary of engagement undertaken

Industry consultation

Discussion has occurred with participating airlines about this trial since 2012-13. The major domestic airlines are represented at the Gold Coast Aircraft Noise Abatement Consultative Committee (ANACC) and, as such, were extensively briefed and involved in

¹ The APAGI SID (Standard Instrument Departure) is the operational name of the procedure applied by air traffic control.

developing this proposal over an extended period. There were also follow-up discussions with airlines outside this forum.

Community consultation

Gold Coast Airport has two community consultation groups: the Community Aviation Consultation Group (CACG) and the ANACC.

The Gold Coast Airport CACG and ANACC meetings are the primary community engagement forums for communication with the community on airport activities and are, therefore, fundamental to our community engagement process. Airservices attends all meetings of both forums, which are each held three times a year. The trial proposal was regularly discussed at CACG and ANACC meetings since 2012-13 and further updates were provided throughout the trial.

Engagement activities primarily focused on providing information to community representatives so they could pass it on to their constituents or membership. In the lead-up to the trial, Airservices also provided information directly to the public and responded to feedback via the Noise Complaints and Information Service (NCIS).

Before and during the trial, Airservices undertook the following community engagement activities:

- attendance and presentation of information at Gold Coast CACG and ANACC meetings
- meeting with the ANACC sub-committee of southern members (prior to the trial operational details being finalised to seek input and meet expectations on where the aircraft could fly). The community expectations from this meeting were that:
 - the flight path was to go no further east than runway heading
 - the flight path was to go as close to the middle of the golf course as operationally possible
- publication of information on Airservices website
- local newspaper, website and newsletter advertising
- letterbox drop to Banora Point residents
- information provided to Federal MP Justine Elliot, Member for Richmond
- information provided to State MP Geoff Provest, NSW Member for Tweed Heads and the Tweed Shire Council
- information and updates provided to Aircraft Noise Ombudsman
- temporary noise monitoring during the trial period made available on Airservices website
- Airservices NCIS distributed information, responded to enquiries and recorded community feedback before and during the trial
- collation of community comments and statistics (including those made to the NCIS).

Operations

Below is the number of aircraft and flight path tracks (per quarter) which used the trial departure flight path throughout the trial period:

Table 1: Use of the trial flight path

Quarter	Number of operations
1: 8 January–March 2015, 1–8 January 2016	2740
2: April–June 2015	3092
3: July–September 2015	2744
4: October–December 2015	2561
Grand total	11 137

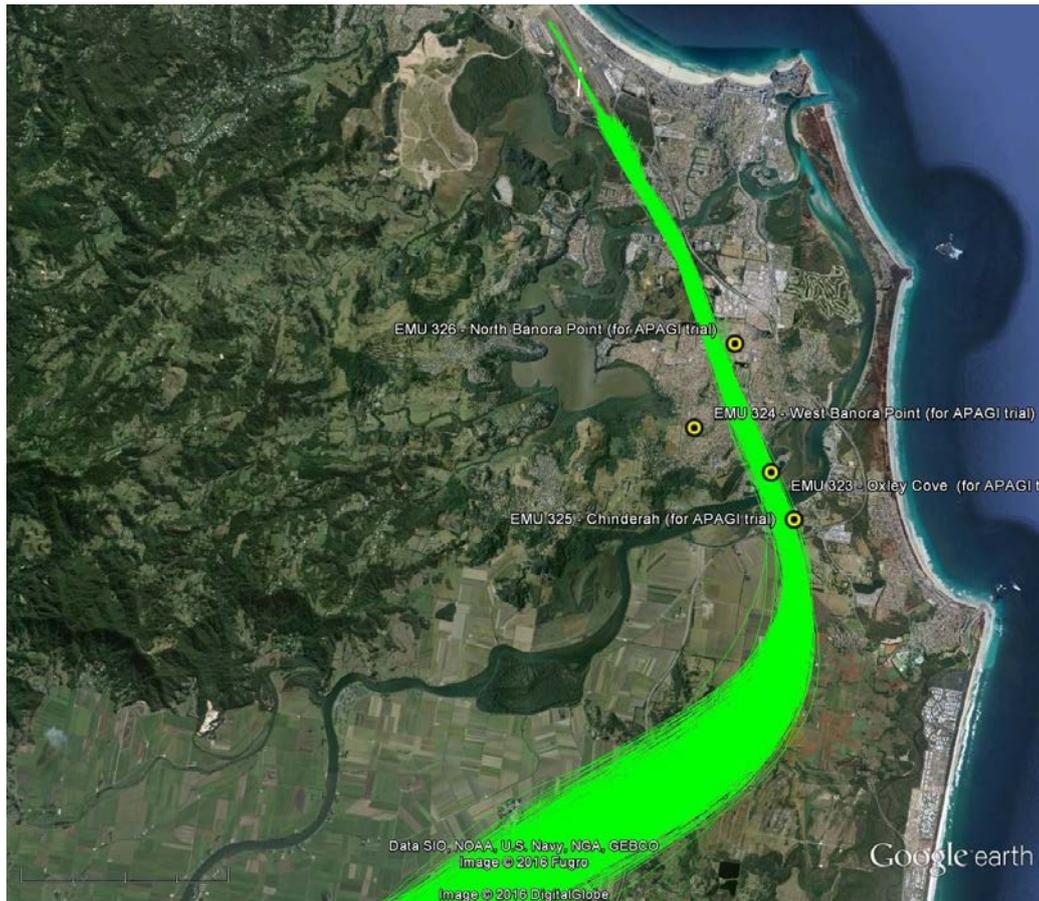


Figure 1: APAGI SID operations quarter 4 2014 pre-trial¹²
(EMU placement for information only)

² Environmental Monitoring Unit (EMU) is the location where noise monitoring was conducted.

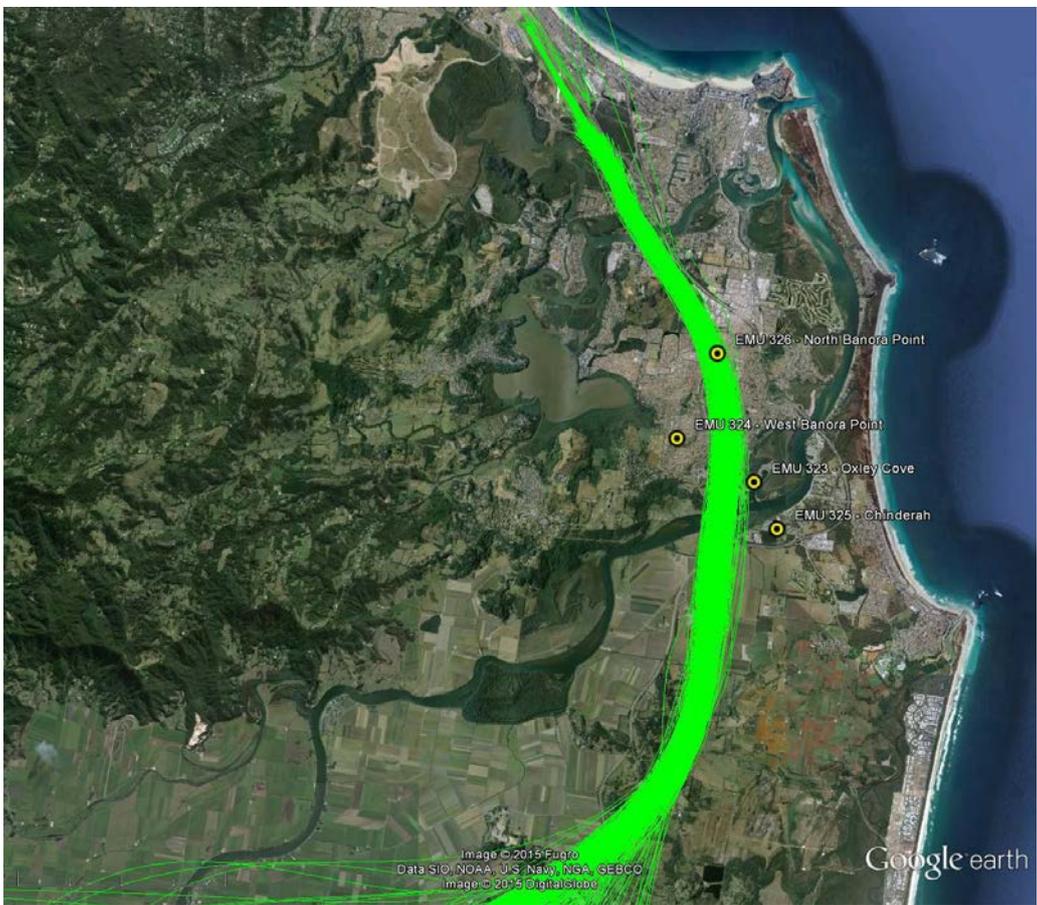


Figure 2: APAGI SID operations quarter 1 2015 (8 Jan-Mar 2015)

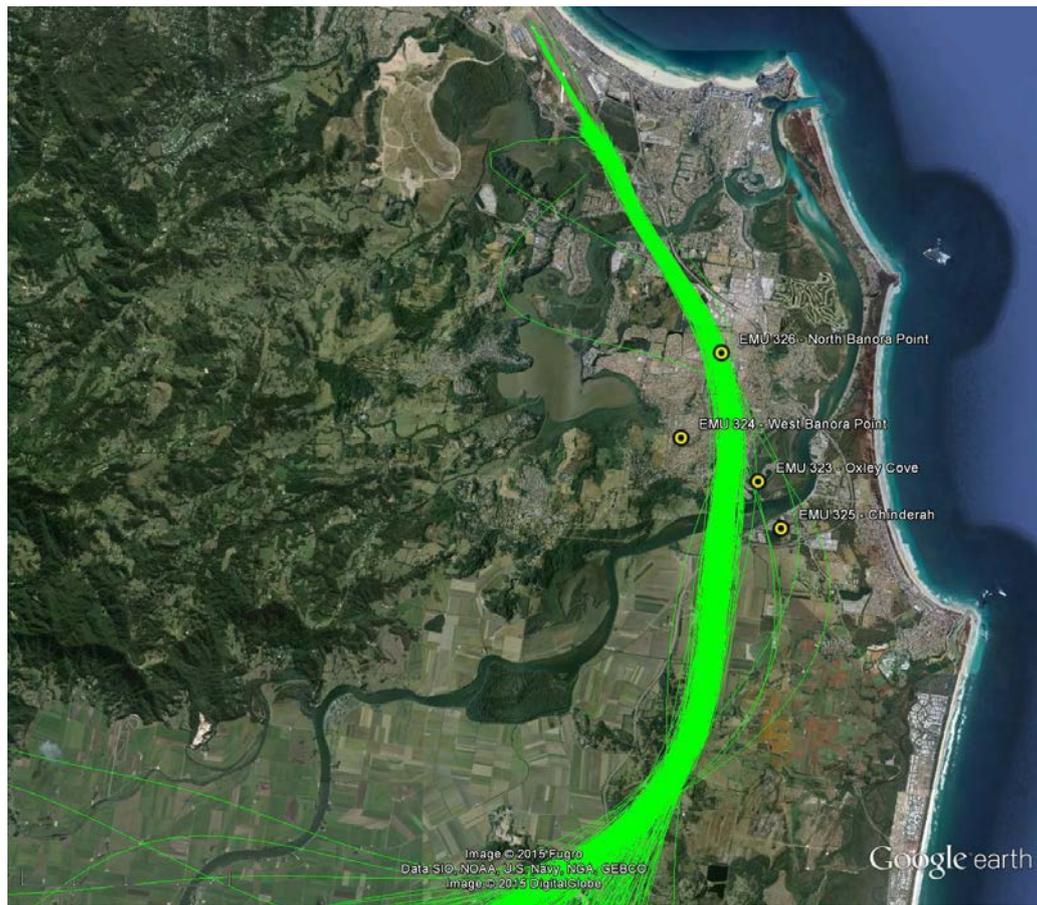


Figure 3: APAGI SID operations quarter 2 2015

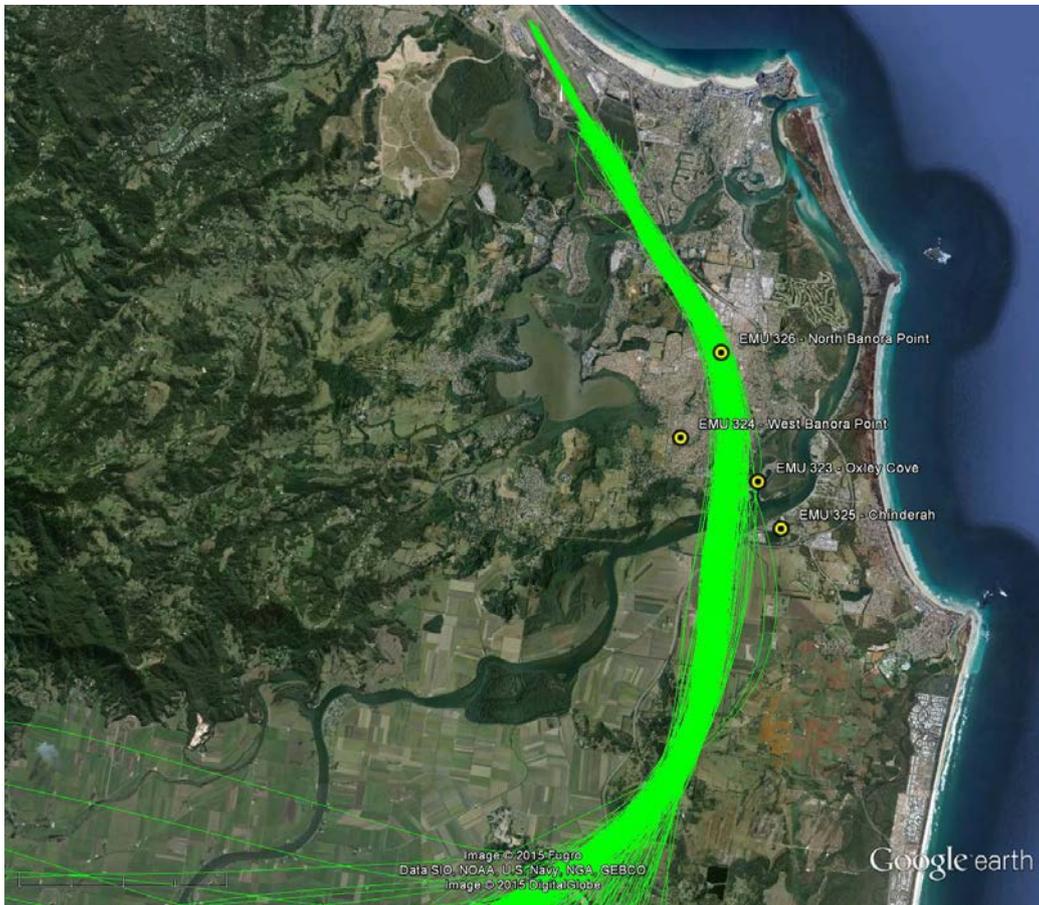


Figure 4: APAGI SID operations quarter 3 2015

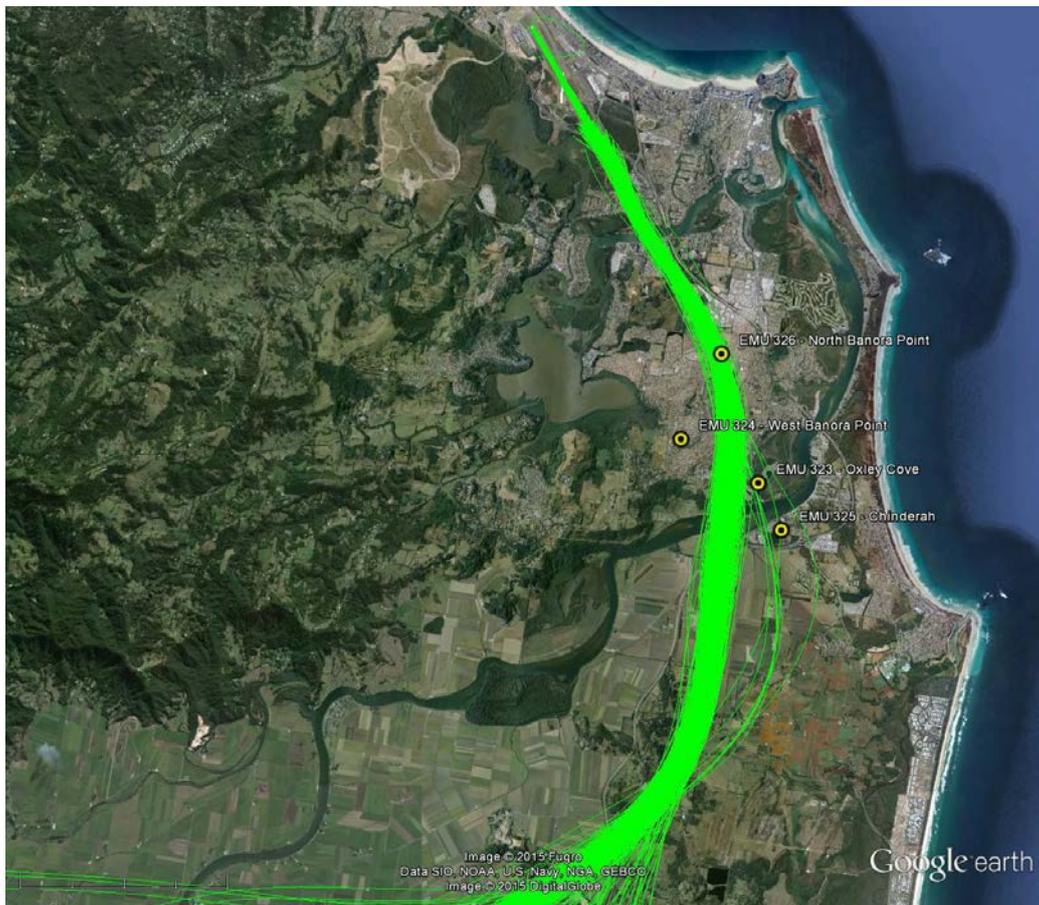


Figure 5: APAGI SID operations quarter 4 2015

Below is a list of aircraft type that used the APAGI flight path during the trial period:

Table 2: Use of trial flight path by aircraft type

Aircraft type	Number of operations
A320	5026
B738	3913
A321	1231
E190	732
GLEX	38
<i>All other aircraft types</i>	197
Grand total	11 137

Noise impacts

Noise modelling

Airservices was unable to undertake pre-trial noise monitoring to use as a baseline for comparison against flights that occurred during the trial. The Integrated Noise Model (INM) was therefore used for baseline purposes in the pre-trial environmental assessment. The INM is a software tool developed by the United States of America's Federal Aviation Administration. It is an average noise model, designed to determine aircraft noise based upon an entire airport's operations, with movement information averaged over time.

Noise monitoring analysis

Airservices conducted noise monitoring during the trial (mid-March–mid-June 2015) at the following locations for three months (as noted in figures 1-5 above):

- Aveo Retirement Village, Banora Point
- Tweed Heritage Caravan Park, Chinderah
- Inverness Court, Banora Point
- Midship Court, Oxley Cove.

The following is a brief analysis of noise monitoring results. A detailed report outlining noise monitor results is available in Attachment 1 and also on Airservices website at <http://www.airservicesaustralia.com/publications/noise-reports/short-term-monitoring/>

Consistent with the pre-trial environmental assessment, the noise monitoring analysis focussed on data for the Airbus A320, as it is currently the aircraft type used most frequently and is consistently among the loudest aircraft on this departure flight path.

Aveo Retirement Village, Banora Point

- The average noise level for an A320 departure from Runway 14 was 74.3 dBA, ranging from 61.5 dBA to 81.8 dBA.
- Noise modelling forecast an average maximum level of 79 dBA.

Tweed Heritage Caravan Park, Chinderah

- The average noise level for an A320 departure from Runway 14 was 67.2 dBA, ranging from 59.5 dBA to 76.7 dBA.
- Noise modelling forecast an average maximum level of 64 dBA.

Inverness Court, Banora Point (West)

- The average noise level for an A320 departure from Runway 14 was 68.5 dBA, ranging from 56.6 dBA to 78 dBA.
- Noise monitoring in 2014 found that the average noise level for an A320 departure was 68.1 dBA, with a maximum of 79.2 dBA.

Midship Court, Oxley Cove

- The average noise level for an A320 departure from Runway 14 was 70.7 dBA, ranging from 58.7 dBA to 78.9 dBA.
- Noise monitoring in 2014 found that the average noise level for an A320 departure was 71.7 dBA, with a maximum of 80.2 dBA.

Handheld monitoring

Handheld noise monitoring was conducted at Lochlomond Drive, Banora Point and Farrants Hill Road, Farrants Hill during one day in March 2015 in order to provide some data for additional locations. All aircraft types were recorded. Due to the small sample size collected by handheld monitoring, this data was not used to formulate conclusions on the aircraft noise impacts at these locations.

The A320 aircraft was recorded at 61.1 dBA at Farrants Hill, and 71 dBA at Lochlomond Drive. No noise modelling was conducted for Farrants Hill before the trial as this was considered to be outside the area where any noticeable change to the flight path might occur. Noise modelling conducted for Lochlomond Drive anticipated an average level of 69 dBA, an increase of two decibels. The limited sample of actual data from the handheld-monitoring therefore indicated a possible increase of four decibels over the pre-trial noise level.

Noise monitoring summary

Noise monitoring results suggest that the anticipated noise reductions outlined in the pre-trial environmental assessment (notably a five-decibel reduction at Chinderah) were not achieved and that the noise impacts in some parts of Banora Point were greater than anticipated by the modelling. Table 3 below compares the modelled average maximum noise levels at the selected reference locations under the previous Runway 14 APAGI departure flight path with the trialled flight path noise monitoring results.

Table 3: Pre-trial noise levels compared to actual noise monitoring

Location	Pre-trial (average) dBA		Noise monitoring (average) dBA	Difference (before to actual) dBA
	Before	After	Actual	
Banora Point (North) (Aveo Retirement Village)	78 Modelling	79 Modelling	74.3	-3.7
Chinderah	69	64	67.2	-1.8

(Tweed Heritage Caravan Park)	Modelling	Modelling		
Banora Point (West)* (Inverness Court)	68.1 Monitoring	N/A*	68.5	+0.4
Banora Point (South)* (Midship Court)	71.7 Monitoring	N/A*	70.7	-1

* No modelling was done for these locations. The data shown are the average noise levels for A320 aircraft that were recorded as part of Airservices short-term noise monitoring program in 2014. In discussion with community representatives about the proposed location of noise monitors during the trial, the decision was made to locate two of those monitors where monitoring had been done previously in order to allow a comparison of actual data.

Community feedback

In addition to receiving the views of ANACC and CACG representatives before and during the trial, the following submissions were received over the 12-month trial period (note the data was analysed and contains no duplications):

- 261 community members contacted the NCIS directly
- 181 signed form letters were forwarded to the NCIS
- 90 signatures via petitions were forwarded to the NCIS.

Below is a breakdown of all the submissions:

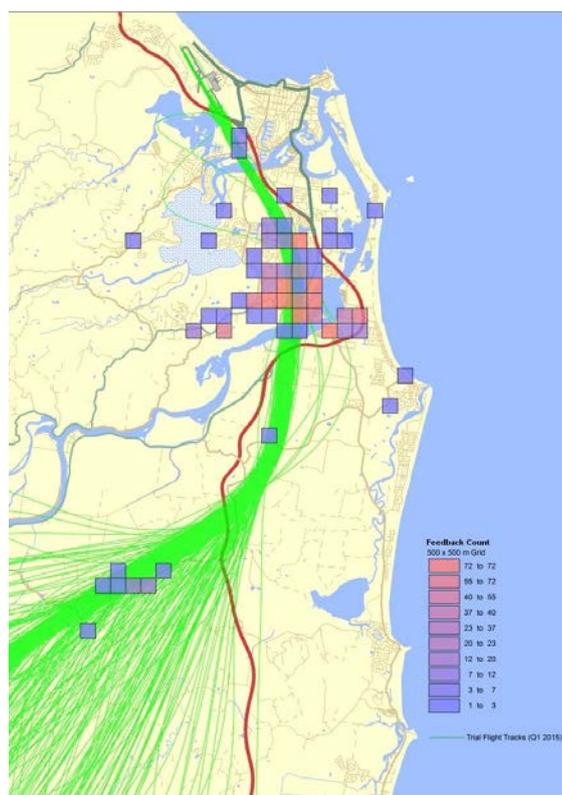
- 187 people supported the trial
- 345 people opposed the trial
- Of these, 261 people individually contacted the NCIS (255 opposed, 6 in support)
- 181 proforma letters signed by residents in support of the trial from Chinderah and Oxley Cove
- Two petitions with 90 signatures from residents opposed to the trial (31 signatures from Farrants Hill residents and 59 signatures from Terranora residents).

Residents who supported the trial were largely from Oxley Cove (Banora Point) and Chinderah.

Residents who opposed the trial were largely from Banora Point, Terranora, Farrants Hill, Clothiers Creek, Stokers Siding, Bilambil Heights, Tweed Heads South and Cudgen.

Figure 6: Location of residents who provided feedback about the trial

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Farrants Hill

Farrants Hill is located some 15 kilometres flight distance along the trial flight path and was therefore considered to be outside the area where a noticeable change in aircraft noise might occur. Soon after the trial commenced, Airservices received feedback from Farrants Hill residents that aircraft noise had increased. Our initial investigation into this situation was inconclusive, as the area was already regularly overflowed by aircraft using the pre-trial flight path and aircraft altitudes were similar or not with any difference that would achieve a noticeable change in aircraft noise.

The handheld monitoring sample for Farrants Hill was limited, however it indicated the noise level of aircraft was consistent with pre-trial levels as shown in Airservices 60 dBA and 70 dBA noise contour mapping, prior to the trial commencing.

As the trial progressed, it became clear that a change in the way aircraft were operating had occurred. The design of the trial flight path had inadvertently resulted in aircraft following a much narrower corridor after they had turned to the southwest—the flight path over the Farrants Hill area was therefore more concentrated than previously. This is illustrated by comparing Figure 1 with Figures 2-5 above.

Airservices considered the concentration of the flight path would need to be resolved for the trial flight path to become a permanent change. The concentration occurred due to a technical design change in how aircraft make their turns at the southern end of the golf course. This change from the pre-trial flight path had been made by Airservices inadvertently. As a result, aircraft continued following a narrow flight path corridor for some considerable distance before spreading out in the sky; previously that spread occurred much closer to the airport and soon after making their turn to the southwest.

The two potential solutions were to move the location of the flight path that was south of the Tweed River or to 'undo' the technical design change in how aircraft made their turns so that aircraft spread out much closer to the airport rather than remaining in a concentrated formation. Neither of these were considered workable.

Moving the southern portion of the flight path is essentially a new trial which would take several months to design, evaluate and communicate before commencement. Airservices would have viewed this option more favourably had the change to tracking aircraft along the length of the Banora Point Golf Course achieved the intended noise benefits. Unfortunately, this had not occurred.

Making the technical design changes to spread aircraft much sooner was the preferred option of the two considered by Airservices. Our analysis, however, indicated a large portion of the flights over Farrants Hill would be moved to nearby Clothiers Creek. While this would resolve the noise issue for one community, it would merely create a new one for another community which would not be a reasonable outcome.

Findings

Maximise tracking over Banora Point Golf Course

The design process included regular discussion with community representatives to align the flight path as close as possible to their requirements, which were down the centre of

the golf course and no further east than the extended runway centreline. The trial maximised tracking over Banora Point Golf Course as much as was possible within the operational constraints of aircraft performance and flight path procedure design guidelines.

While a range of community feedback has been provided to Airservices during the 12-month period, the majority of community members who did so did not support the change, including those areas that had intended to benefit from the trial.

Reduce noise impacts for local residents

Noise monitoring was conducted in March–June 2015 at four locations in Banora Point, Oxley Cove and Chinderah. Additional handheld noise monitoring was conducted in Farrants Hill and Banora Point. The results demonstrate the intended noise improvement was not achieved.

Modelling conducted in the pre-trial environmental assessment anticipated that Chinderah could receive a noise reduction of five decibels (dBA), a level considered likely to be noticeable and valued by the community. However, noise monitoring conducted during the trial found the noise reduction achieved was only 1.8 dBA, a level accepted as unable to be noticed by most people.

In Oxley Cove, noise monitoring found there had been a reduction of one decibel when compared to data collected in early 2014, also a level considered unable to be noticed. Noise monitoring conducted in other parts of Banora Point found there was a slight increase in noise levels when compared to 2014 levels; this was consistent with modelling conducted as part of the pre-trial environmental assessment and also at levels not likely to be considered noticeable.

The unintended consequence of concentration of flight paths over Farrants Hill was unable to be resolved.

Conclusion

Airservices has determined not to implement the trial permanently and to revert to the procedures that were in place prior to the trial.

Notwithstanding the amount positive feedback received about the trial, Airservices considers the trial did not achieve the intended outcomes. Noise monitoring demonstrated the intended noise improvement did not eventuate and therefore the trial was not considered to be a noise improvement. Airservices nonetheless considered the possibility of making the trial flight path a permanent change, however one area (Farrants Hill) had been negatively impacted, a situation which Airservices was unable to resolve.

It is unfortunate that Airservices has not been able to achieve the desired noise improvement and we note there will be many people who will be disappointed by this outcome, particularly those who have provided positive feedback. The feedback from the community has formed an important part of the decision-making, however with the noise monitoring providing data showing the noise reduction was unable to be noticed, coupled with the unintended noise consequence of the trial for residents of Farrants Hill, it is appropriate to return to the pre-trial procedure.

The original flight path will be reinstated following procedure design work and once regulatory approvals are obtained. This work will be completed by June 2016. In the meantime, the trial flight path will remain in place.