



# Hobart Airport Noise Abatement Procedure (NAP) trial proposal - Flight Path Design Assessment Outcome

## 1. Background

The Hobart Airspace Design Review Post Implementation Review (PIR), completed in April 2022, identified higher than forecast aircraft movements over Primrose Sands, Carlton and Carlton River, when actual movements were compared to those modelled in the 2018 Environmental Impact Assessment (EIA). The PIR found this was driven by a number of factors, including greater use of the fixed visual approach and the increased uptake of Required Navigation Performance – Authorisation Required (RNP-AR) technology by aircraft operators (see Figure 1 below), both of which place aircraft movements over these communities on arrival to runway 30 (RWY 30).



Figure 1 RWY30 RNAV and RNP-AR/Visual approaches

In response to community feedback captured during the PIR, the final report contained the following recommendation to address the higher than expected operations on this flight path:

**Recommended Action 5:** *Airservices will undertake further assessment of a potential Noise Abatement Procedure (NAP) change to specify preferred runway use at sensitive times of the day, including further community and industry engagement to determine what times of day or night would apply and operational requirements for exemptions.*

The aim of this recommendation was to identify a means to provide respite to the Primrose Sands and surrounding area, given the higher than forecast actual operations. Runway nomination NAP options were investigated but were subsequently deemed ineffective due to the strong wind conditions that mandate runway use in Hobart. These conditions mean that a preferred runway operation to address the higher than expected overflight of these communities would be unlikely to be successful, as it would be the wind direction rather than the NAP that would dictate runway use.

This recommendation, as discussed in Section 14 of the Final PIR Report, also suggested assessment of an approach procedure NAP to RWY30 to better balance aircraft noise. The proposed NAP would move some aircraft movements from the RNP-AR/visual approach procedure at defined times of the day, to provide respite for the affected communities, shifting these operations to the longer Area Navigation (RNAV) procedure.

The development of this NAP proposal included consideration of the PIR finding that the RNAV approach procedure had received less movements than identified in the EIA modelling.

## 2. Community engagement

In November and December 2022, Airservices engaged with the Hobart community on the proposed NAP, suggesting it as a trial operation to enable further feedback to be captured prior to deciding if the NAP should become permanent.

The proposed NAP would redistribute aircraft from the RNP-AR/visual approach to the RNAV approach to RWY30 (see Figure 1). Further details are available in the [NAPS fact sheet](#) on the [Engage Airservices project page](#).

Different times at which the NAP could be operated to provide defined respite periods were identified and shared with the community. A survey was implemented to identify community preference for the NAP trial, including a 'no change' option to enable community members not supportive of the trial to also share their preference.

Survey respondents also had the option of choosing a six-month or twelve-month trial period for the selected NAP to operate.

Figure 2 shows the time periods which were presented as part of the NAP survey. In response to community feedback received early in the engagement period, we also provided the option for community members to nominate their own time periods for the NAP trial (Option 5 – 'nominate a time period of your own').

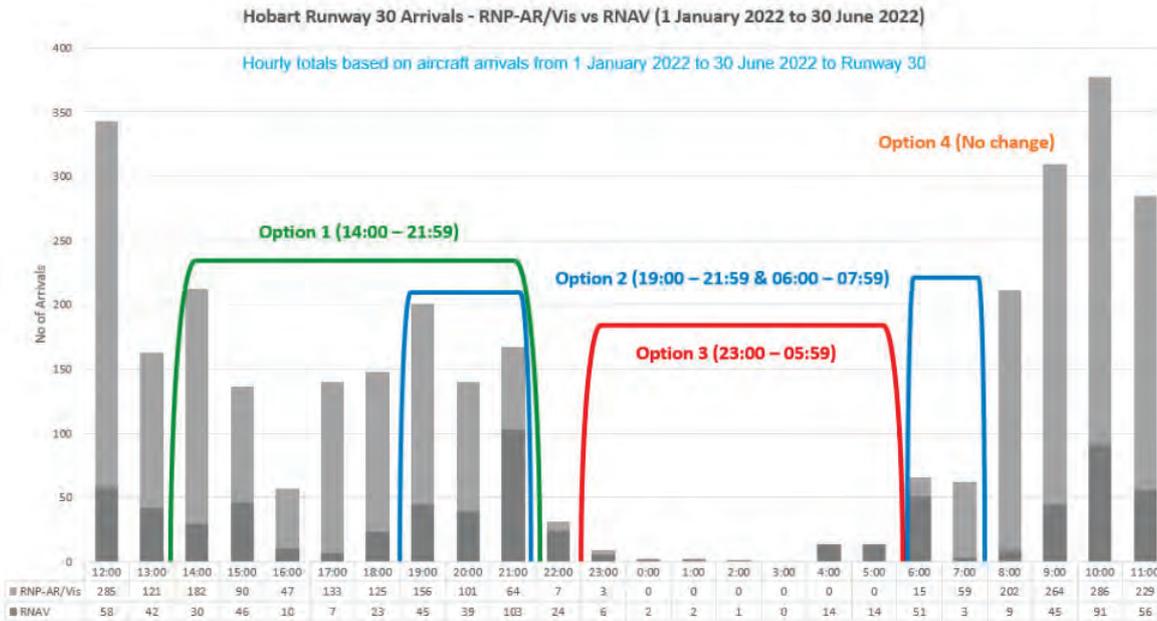


Figure 2 Hobart NAP trial options\* (Option 5 not represented)

**Survey results – Support for a NAP trial or preference for no change**

The results of the community survey identified a clear preference (63 per cent of respondents) for a 6-month trial period, if the trial was to proceed.

In terms of the NAP trial operation, the survey identified:

- 47 per cent of participants had a preference for ‘no change’ to existing operations
- 53 per cent of participants were in favour of a NAP trial, noting there was a spread of preferred implementation times.

Figure 3 provides an overview of the results in response to the NAP trial period.

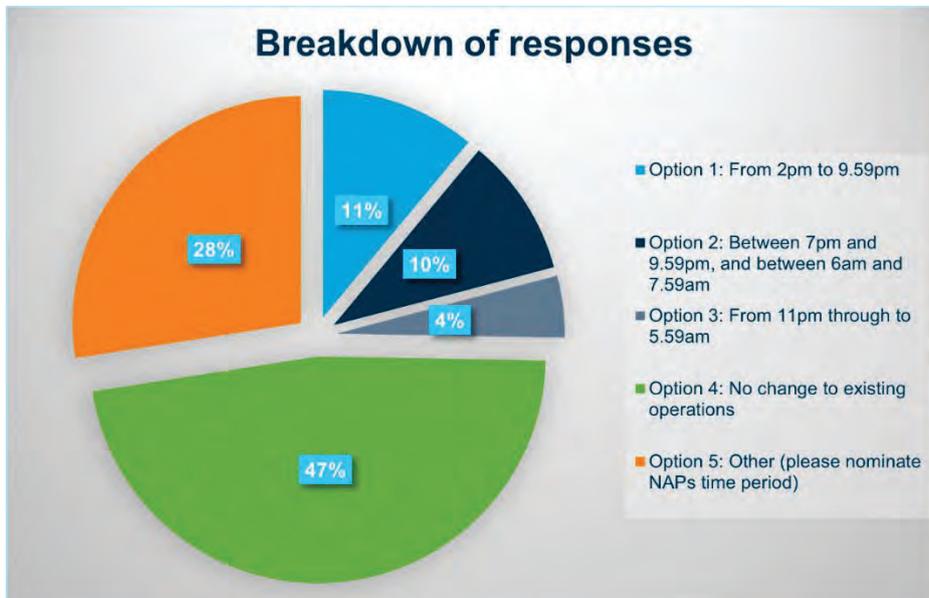


Figure 3 Hobart NAP Survey Results

To understand the location of respondents supporting the NAP trial (illustrated in yellow) and those stating a preference for no change to current operations (displayed in green), we have mapped this in Figure 4 below.

The areas of Dunalley, Murdunna, Boomer Bay, Marion Bay, Bream Creek, Copping, Eaglehawk Neck and Kellevie represent 75 per cent of respondents indicating a preference for no change to current operations, noting some respondents from Primrose Sands, Dodges Ferry and other locations closer to the airport also noted this preference. While the RNAV approach proposed to use in the NAP does not directly overfly the majority of these communities, it is acknowledged they may notice aircraft operating on this procedure.

The majority of respondents who stated a preference for a NAP trial live in close proximity to the RNP-AR procedure in Primrose Sands and Dodges Ferry, with one respondent further from the airport. Some respondents in these locations also stated they would prefer no change to the operations, but this was a much lower number than those stating support (approximately 20 per cent of respondents in close proximity to the RNP-AR).

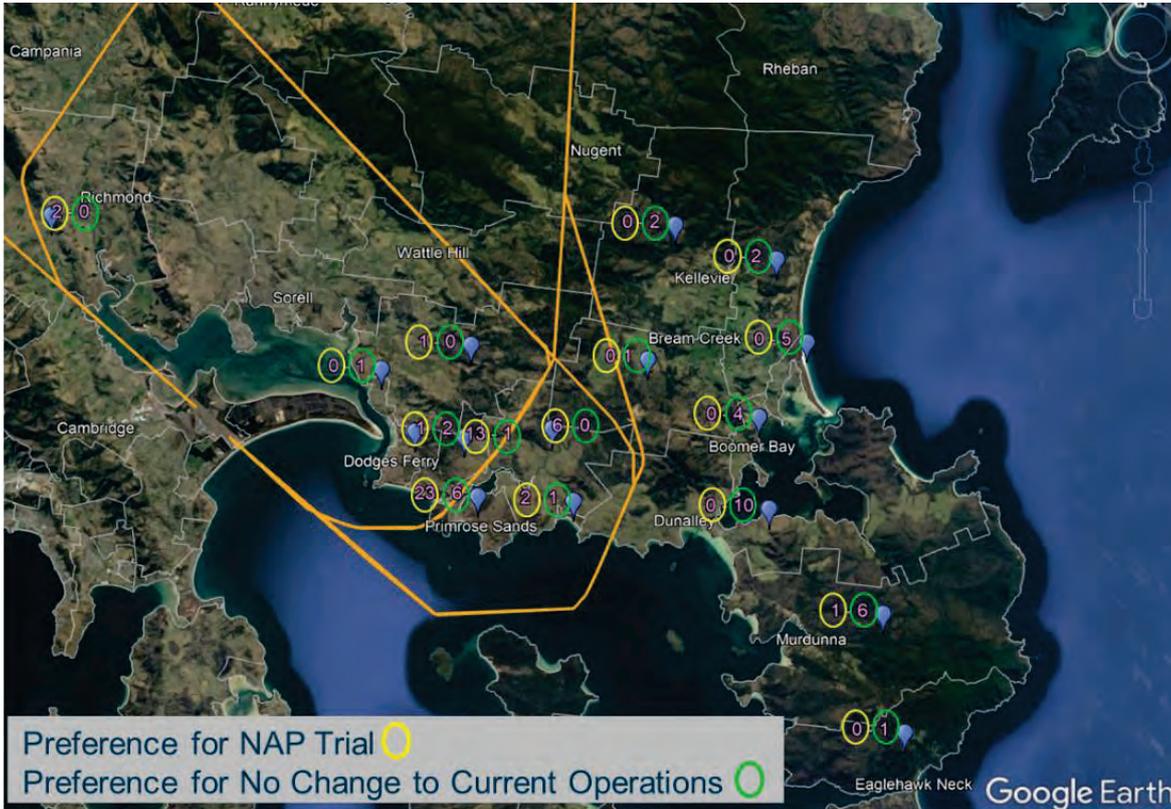


Figure 4 RWY30 Arrival NAP Survey Results by location

### Survey results – NAP time period for those supportive of the NAP trial

The survey provided the community the opportunity to select a pre-determined NAP trial period. Responses for the predetermined time periods were (percentages are based on total survey response including ‘no change’):

- 2pm to 10pm (11 per cent support)
- 7pm to 10pm and 6am to 8am (10 per cent support)
- 11pm to 6am (4 per cent support).

Responses for the self-select time periods (option 5) were (percentages are based on total survey response including ‘no change’):

- 7am to 2pm (6 per cent support)
- 2pm to 10pm (1 per cent support)
- Overnight – 10pm to 7am (7 per cent support)
- Full day – 7am to 10pm (9 per cent support)
- 24 hours (5 per cent support).

This feedback was considered to determine times for the NAP trial that if implemented, would be most supported by those who were in favour of the NAP trial. The following times were identified:

1. 2pm to 8am (possible support of 33 per cent of overall respondents)  
Support may come from those respondents who elected a preference for the following time periods:
  - 2pm-10pm (12 per cent of overall responses)
  - Overnight, being 10pm-7am (7 per cent of overall responses)
  - 7pm-10pm and 6am-8am (10 per cent of overall responses)
  - 11pm-6am (4 per cent of overall responses)
2. 7am to 10pm (possible support of 27 per cent of overall respondents)  
Support may come from those respondents who elected a preference for the following time periods:
  - Full day, being 7am-10pm (9 per cent of overall responses)
  - 7am-2pm (6 per cent of overall responses)
  - 2pm-10pm (12 per cent of overall responses)
3. 2pm to 10pm (possible support of 12 per cent of overall respondents)  
Support may come from those respondents who elected a preference for the following time periods:
  - 2pm-10pm (12 per cent of overall responses).

### 3. Industry engagement

Customers anticipated to be impacted by the trial will be engaged should the NAP trial proceed and once the specifics of the trial are confirmed. Further engagement with customers will occur during the trial to obtain feedback on benefits and impacts.

### 4. Engagement outcomes

The review of community survey responses did not provide a clear community preferred direction to support decision-making, noting only just over half of respondents supported the NAP trial (53 per cent) and just under half preferred current operations to be retained (47 per cent).

Any change to aircraft operations can result in changes to communities impacted by these operations. As such, further assessment of the proposed NAP trial has been given against the intent of the PIR recommendation (to reduce the impact of operations on communities affected by higher than forecast operational outcomes) and against our [Flight Path Design Principles](#) (FPDP) to support our decision-making.

### 5. Further assessment

#### 5.1 Intent of the PIR recommendation

**Intent:**

The inclusion of this recommendation in the final PIR report aimed to address the higher than forecast aircraft operations over communities under the RNP-AR approach procedure to RWY 30.

**Assessment:**

Table 1 below identifies the relative use of each approach procedure as forecast in the 2018 Environmental Impact Assessment (EIA) and based on actual use across 1 June 2022 - 31 May 2023.

The earlier forecast identified two-thirds of aircraft movements as approaching on the RNAV and one-third on the RNP-AR/visual. Actual movements show this situation as reversed, with three-quarters of all movements on the RNP-AR in 2022-2023. The reason for this increase was identified as being due to the uptake of RNP-AR technology by airlines over the period from 2018 to 2023, in keeping with technological improvements and also to enable more efficient operations, thus saving on fuel and CO<sub>2</sub> emissions.

RWY30 Arrivals (Hobart)	EIA split (Jan – Apr 2018)	Current Operations (1 June 2022 – 31 May 2023)
RNP-AR	33%	80%
RNAV	67%	20%

Table 1 Comparison of RWY30 operations – 2018 Environmental Impact Assessment (EIA) versus current operations

**Outcome:**

By implementing a NAP, operations could be better balanced between the RNP-AR and RNAV resulting in more equitable noise sharing outcomes that are more reflective of earlier forecasts and of what was communicated to the community on these operations prior to implementation.

Implementing a NAP trial meets the intent of the PIR recommendation. Retaining current operations does not meet the intent of this recommendation.

**5.2 Safety and compliance***5.2.1 Safety of air navigation must be the most important consideration***Objective:**

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.
- Meeting Civil Aviation Safety Authority (CASA) criteria for flight path design, and airspace separation and containment
- Meeting International Civil Aviation Organization (ICAO) criteria adopted by CASA for application in Australia
- Quality assurance processes documented in accordance with *Civil Aviation Safety Regulations 1998 Part 173 – Instrument Flight Procedure Design*
- Applying design validation methods including:
  - Airline simulator testing and validation to ensure the fly-ability of the procedures, as appropriate
  - Air Traffic Control (ATC) simulator testing and validation to ensure that ATC workload is achievable
  - Flight validation of instrument flight procedures.

**Assessment:**

Both the RNP-AR and RNAV approach paths are currently being flown and are deemed safe approaches to RWY30.

**Outcome:**

Implementing a NAP trial meets the objective of the principle, as does maintaining current operations.

*5.2.2 Flight path design must comply with Australian and International design standards and cater for the range of aircraft that will operate on the flight paths***Objective:**

In designing flight paths, we must comply with the CASA regulations and standards, and ICAO Standards and Recommended Practices (SARPs), Manuals and documentation. Consideration is to be given to the type and performance of aircraft operating at an airport or aerodrome, taking into account the length and width of the runway, terrain and obstacle clearance, meteorological conditions, climb gradients, descent profiles, speeds, rate of turn, angle of bank and the airspace available to safely contain the procedure.

**Assessment:**

Both the RNP-AR and RNAV approaches are currently being flown and comply with Australian and international design standards. A Noise Abatement Procedure designed to divert all aircraft onto the RNAV approach during defined time periods will need to stipulate that non-RNP-AR equipped aircraft will also be required to utilise the RNAV during visual meteorological conditions and outside of tower hours to ensure adherence with the intent of the NAP.

**Outcome:**

Implementing a NAP trial meets the objective of the principle, as does maintaining current operations.

### 5.3 Noise and community

#### 5.3.1 Consider concentrating aircraft operations to avoid noise sensitive sites

##### Objective:

Under the *Air Services Act 1995*, Airservices has an obligation to provide environmentally responsible services by minimising the environmental impact of aircraft operations, including the impact of aircraft noise. Consideration of noise sensitive sites can include:

- residential buildings
- schools and places of education including pre-schools and childcare centres
- hospitals, aged care facilities and other health facilities
- places of worship
- places of temporary residence including hotels and motels; and
- public recreation buildings.

The sensitivity to aircraft noise may vary due to the time of day and the type of activity undertaken at that site and any existing management or mitigation measures in place. It may be impractical to completely avoid noise sensitive sites, especially if sites are already in proximity to airports, or if flight paths are constrained by terrain, obstacles or other airspace restrictions.

##### Assessment:

When considering the impacts of aircraft operations on a community we use 'Number Above' metrics (also known as 'N Contours') - for example N60 contours show the number of noise events at or above 60 decibels (A) (dB(A)) over a given time period (e.g. 60dB(A) over 24 hours). The N60 is used as a guide for noise events, as 60dB(A) has been identified in Australia as a level of noise interruption that may potentially affect listening activities or sleep. While the extent of the noise contour does not change as a result of more or less aircraft over a particular area, the frequency of noise events over the area may increase or decrease, increasing the 'N' measure (e.g. from 5 events to 10 events).

Figure 5 shows the N60 for the current operations at Hobart Airport over the period 1 June 2022-31 May 2023 (24hr). The numbers shown on each contour line represent the number of events at or above 60 decibels within the defined area.



Figure 5 Current Operations N60 Noise Contours

We have used the current N60 noise contours to identify noise sensitive sites within the full contour (to 2 events per 24 hour period) the vicinity of each approach path to RWY30 (see Table 2).

<b>RNP-AR Sites within the N60</b>	<b>RNAV Sites within the N60</b>
Steeles Island Retreat	NIL
Primrose Sands RSL	
Carlton River B&B	
Redbanks Fish & Field	
Coastal Garden Shack	
Carlton Park Surf Life Saving Club	

Table 2 Noise sensitive sites located within the N60 contours

There are a number of noise sensitive sites in a wider radius of the airport that are located outside the N60 contour, and as such are likely to be subject to aircraft noise, however these will be at lower decibel levels. The noise levels will depend on proximity to the identified N60 contours. A NAP trial would reduce the impact of operations on noise sensitive sites within the N60 contour.

It is acknowledged that aircraft noise at night may have a greater impact on communities than daytime operations, and as one of the preferred NAP trial time periods would affect night time operations, night time movements have also been assessed.

Table 3 below shows the number of nights per year that aircraft use each approach to RWY30, and how many flights have used each approach over the respective 12-month periods. The RNAV is more heavily used at night (between the hours of 11pm and 6am) and includes some Regular Passenger Transport (RPT) aircraft that have been delayed during regular operations and some freight aircraft in the early hours of the morning. Noting the distribution of traffic in Table 1 which shows higher traffic volumes for the RNP-AR overall across 24 hours, there are fewer flights using the RNP-AR at night.

A NAP trial which runs throughout the entire night period would therefore not have a considerable effect on the total aircraft movements on the RNAV approach during the night hours, given this appears the preferred approach for night-time operations currently. Also, with no identified sensitive sites within the N60 decibel contour for the RNAV, its use at night would appear to have a lesser impact on sensitive locations and land uses.

<b>12-month period</b>	<b>RNP-AR usage from 11pm to 6am</b>		<b>RNAV usage from 11pm to 6am</b>	
	<b>No. of Nights</b>	<b>No. of Flights</b>	<b>No. of Nights</b>	<b>No. of Flights</b>
<b>2020-2021</b>	4	4	68	82
<b>2021-2022</b>	9	9	103	115
<b>2022-2023</b>	26	26	102	110

Table 3 Historic use of RWY30 RNP-AR/Visual and RNAV Approach between 11pm and 6am

**Outcome:**

Implementing a NAP trial to restrict operations on the RNP-AR would reduce the number of events that noise sensitive sites within the N60 contour experience. Retaining current operations would not achieve this outcome. There would also be a reduction in the number of residences directly overflown given the residential density for each approach flight path (see Figure 9, Figure 11 and Figure 13). When considering the night-time NAP trial option, the number of flights using the RNP-AR at night is low when compared to the RNAV.

Implementing a NAP trial meets the objective of the principle. Retaining current operations does not meet the objective of this principle.

5.3.2 Consider potential impacts on social, economic and cultural values of communities and locations, including Indigenous and other heritage places

**Objective:**

Consider the impact of aircraft operations on communities and locations within the N60 noise contours of each flight path. Recognise that rural and urban communities may be impacted by aircraft operations differently. Give consideration to people

and communities, heritage values, and their social, economic and cultural aspects when conducting flight path design. Wherever practicable, flight paths are designed to minimise the impact of aircraft operations.

**Assessment:**

Locations documented as having social, economic or cultural importance, or locations of national environmental significance are listed in the following sources:

- Department of Climate Change, Energy, the Environment and Water Protected Matters Search Tool
- State and Territory Heritage Registers
- State Aboriginal and Torres Strait Islander Cultural Heritage Registers
- Local Government urban and community planning documents.

There is a significant contribution from tourism activities to the economic stability of the area. Tourism facilities and businesses are based predominantly on the southeast coast, particularly in the Port Arthur and east coast areas.

Using the Department of Climate Change, Energy, the Environment and Water Protected Matters Search Tool, the image below shows those protected sites under the *Environment Protection and Biodiversity Conservation Act (EPBC) (1999)* within the N60 contours for each approach path. There are a number of protected areas within the N60 contours of the RNP-AR approach path, however no such areas exist under the N60 contours for the RNAV approach.

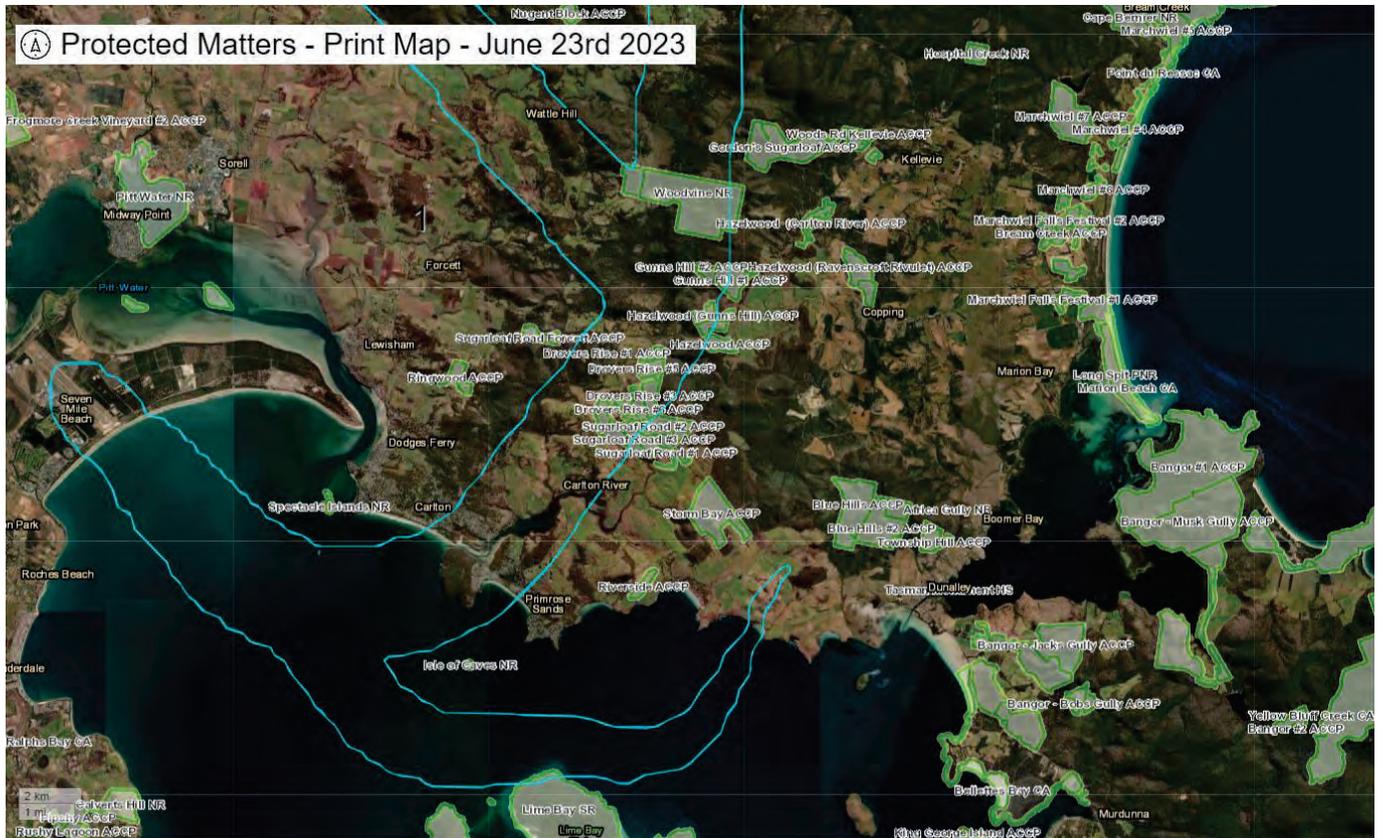


Figure 6 Map of protected matters under the EPBC Act (1999) – Current operations

Figure 7 below illustrates the noise sensitive and heritage listed sites that are located within the existing N60 contours, relating to each of the approach paths.

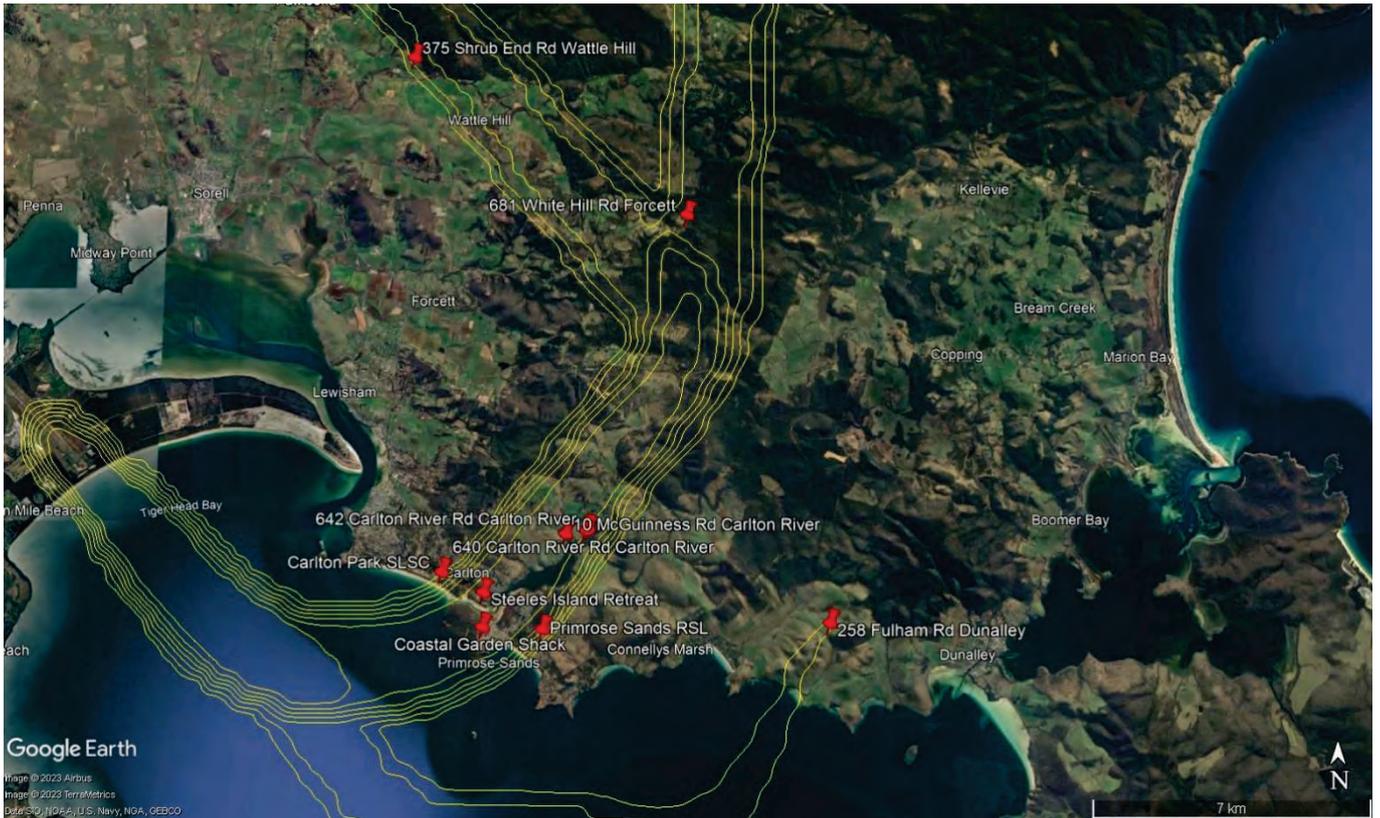


Figure 7 Noise sensitive and Tasmanian Heritage Register sites located in the existing N60 contours

A portion of the property (uninhabited land) located at 258 Fulham Road, Dunalley falls within the N60 contour for the RNAV approach path, however all buildings on this property are outside the N60 contour.

No listed RAMSAR Wetlands are under either the RNP-AR or the RNAV approach paths.

The Southern Tasmania Regional Land Use Strategy 2010-2035 seeks to preserve coastal environments through land use planning, encouraging consolidation of some residential parcels and prevention of any further residential development outside of established settlements, particularly ribbon development. Land use under both the RNP-AR and RNAV approaches are currently predominantly rural living and low density living. Any future high-density development is not likely as it would not be consistent with Council’s desire to remain low density residential. Future residential developments would also require service upgrades as a large proportion of this area is not serviced by reticulated water and sewer connections. Population density is greater in the areas of Dodges Ferry, Primrose Sands and Carlton (RNP-AR route), as opposed to Connellys Marsh (RNAV route) as noted in the next principle.

**Outcome:**

Implementing a NAP trial meets the objective of the principle, as does retaining current operations.

*5.3.3 Where high density residential areas are exposed to noise, consider flight path designs that distribute aircraft operations, so that noise can be shared*

**Objective:**

Minimise the environmental impact of aircraft operations, including the impact of aircraft noise, on high density residential areas. Distributing aircraft operations across multiple areas can provide periods of respite from aircraft noise, within the constraints of a range of considerations including traffic demand and weather.

**Assessment:**

The following images capture historic aircraft movements (arrivals to RWY30 and departures from RWY12) for the period 01/06/2022 to 31/05/2023. An image with residential density only (pink) is also provided separately for reference as images with flight paths may make it difficult to see population density under the arrival and departure tracks.

The tracks shown in Figure 9 and Figure 11 illustrate that arrivals to RWY30 are commonly tracking between Carlton and Primrose Sands (Carlton Beach is specifically overflown), however, departures shown in Figure 10 and Figure 12 are more commonly flying directly over Dodges Ferry and Carlton areas.

It is important to note that arrivals and departures will not be simultaneously occurring at the same time over the same area. When RWY30 is in use, arrivals will fly over this area, however departures will be flying directly north from the airport. When RWY12 departures are flying over this area, arrivals will be approaching the runway directly north of the airport. In the context of Recommended Action 5, images showing departures to the south on RWY12 are for information purposes and are not the subject of this assessment, or recommended actions from the Hobart Airspace Design Review PIR.



Figure 8: Residential density in the Hobart region



Figure 9: Rwy30 arrivals for the period 01/06/2022-31/05/2023



Figure 10: Rwy12 departures for the period 01/06/2022-31/05/2023

Figure 11 and Figure 12 show a zoomed in image of arrival tracks to Rwy30 and departures from Rwy12 in close proximity to the township of Connellys Marsh.

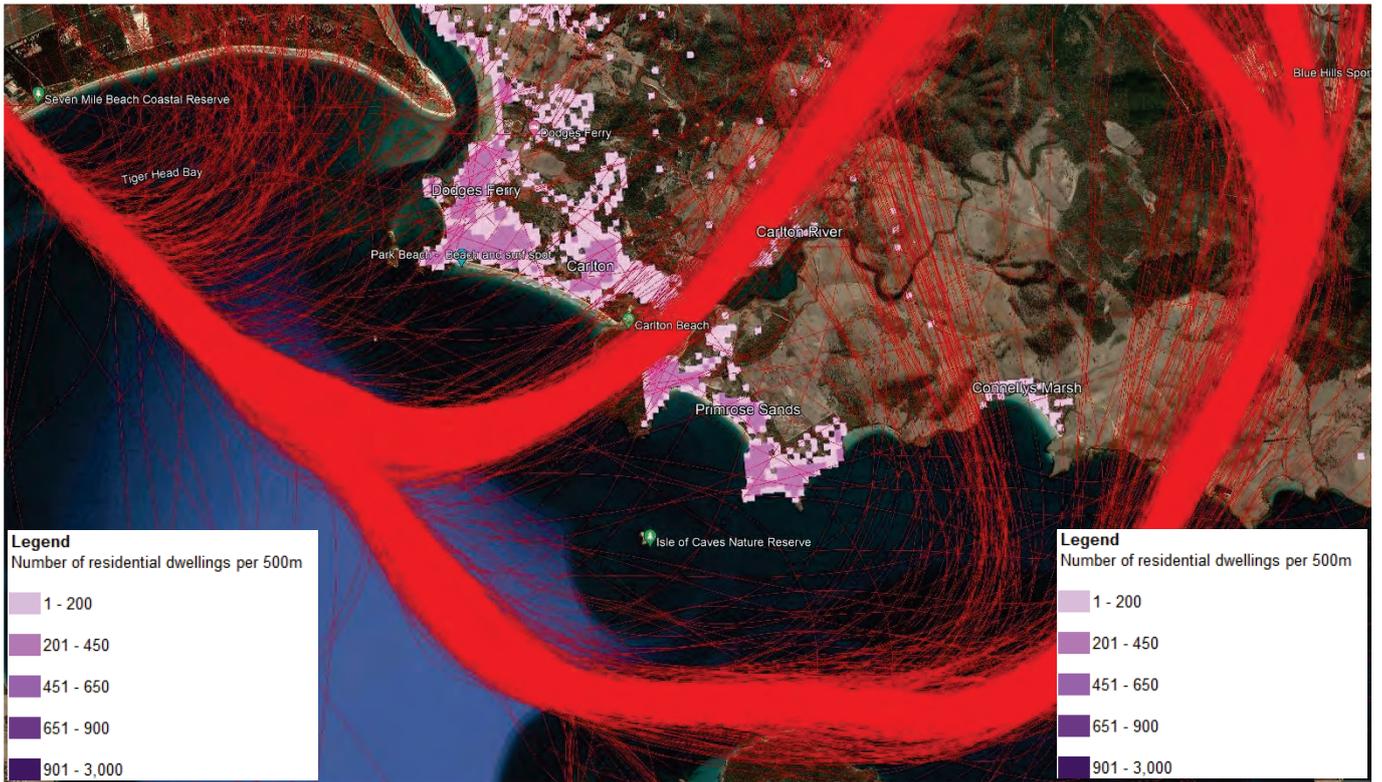


Figure 11: RWY30 arrivals (zoomed in) for the period 01/06/2022-31/05/2023

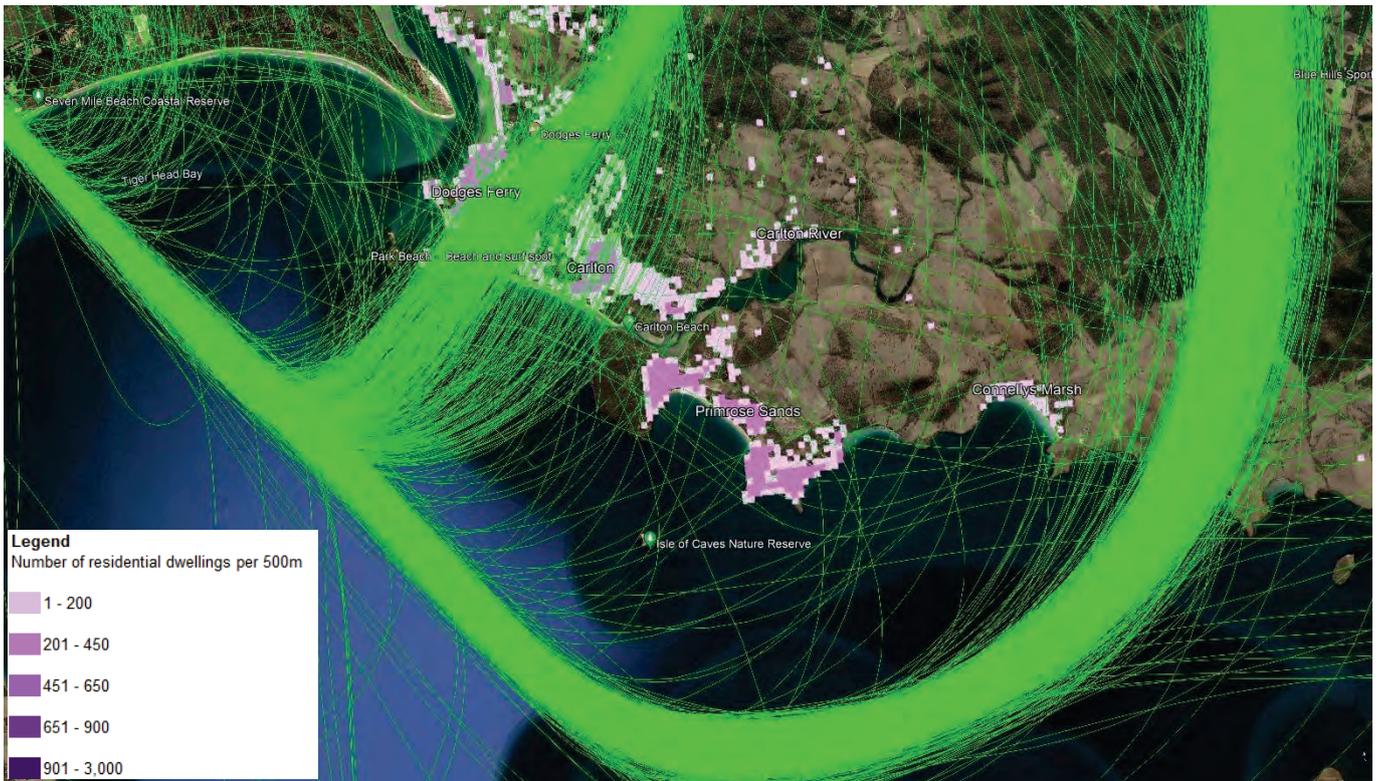


Figure 12: RWY12 departures (zoomed in) for the period 01/06/2022-31/05/2023

In Figure 13 and Figure 14, we have assessed the distance between the departure and arrival tracks to the outskirts of the township of Dunalley, the closest populated location to these operations. The distance varies between approximately 3 and

4.5km respectively. The townships of Connellys Marsh and Dunalley are outside of the N60 noise contours for existing operations.

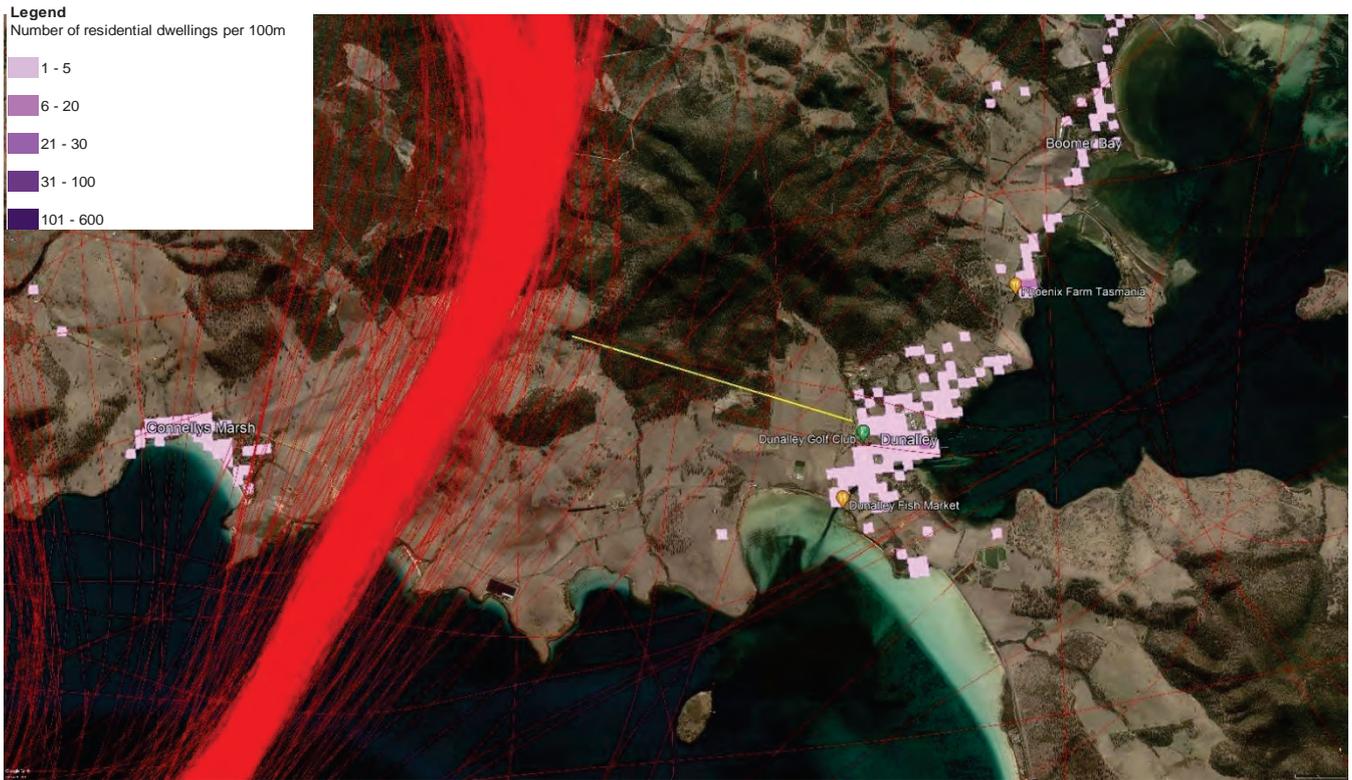


Figure 13 RNAV arrivals to RWY30 for the period 01/06/2022-31/05/2023. Pink indicates residential density. Yellow line shows distance between RNAV and township of Dunalley (3km)

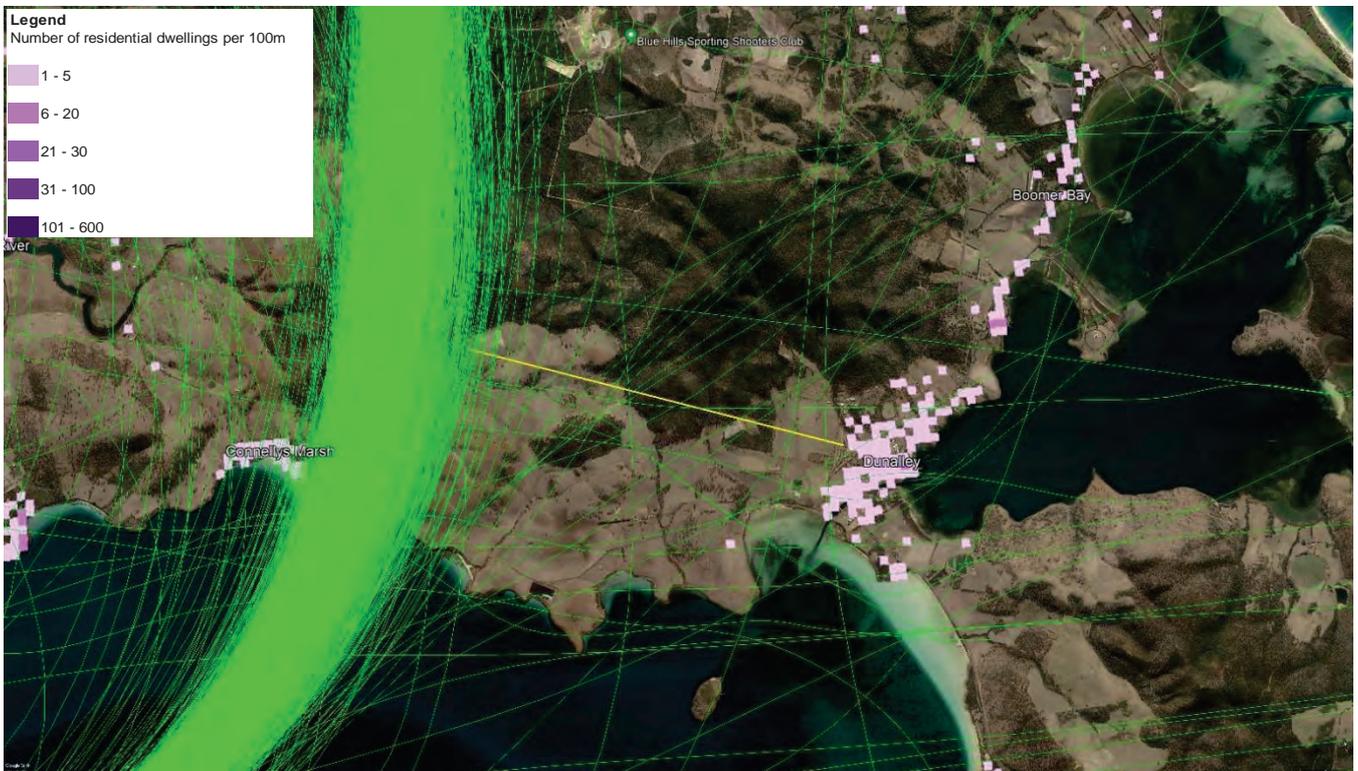


Figure 14: Departures from RWY12 for the period 01/06/2022-31/05/2023. Pink indicates residential density. Yellow line shows distance between departures and township of Dunalley (4.5km)

We have also considered operations from other nearby airports over these locations.

Figure 15 below illustrates the impact of aircraft operations out of Cambridge Airport for the period 01/06/2022 to 31/05/2023. Air traffic associated with Cambridge Airport is concentrated and spread over both the Connellys Marsh, Mardunna and Dunalley regions as well as the Primrose Sands and Dodges Ferry areas.

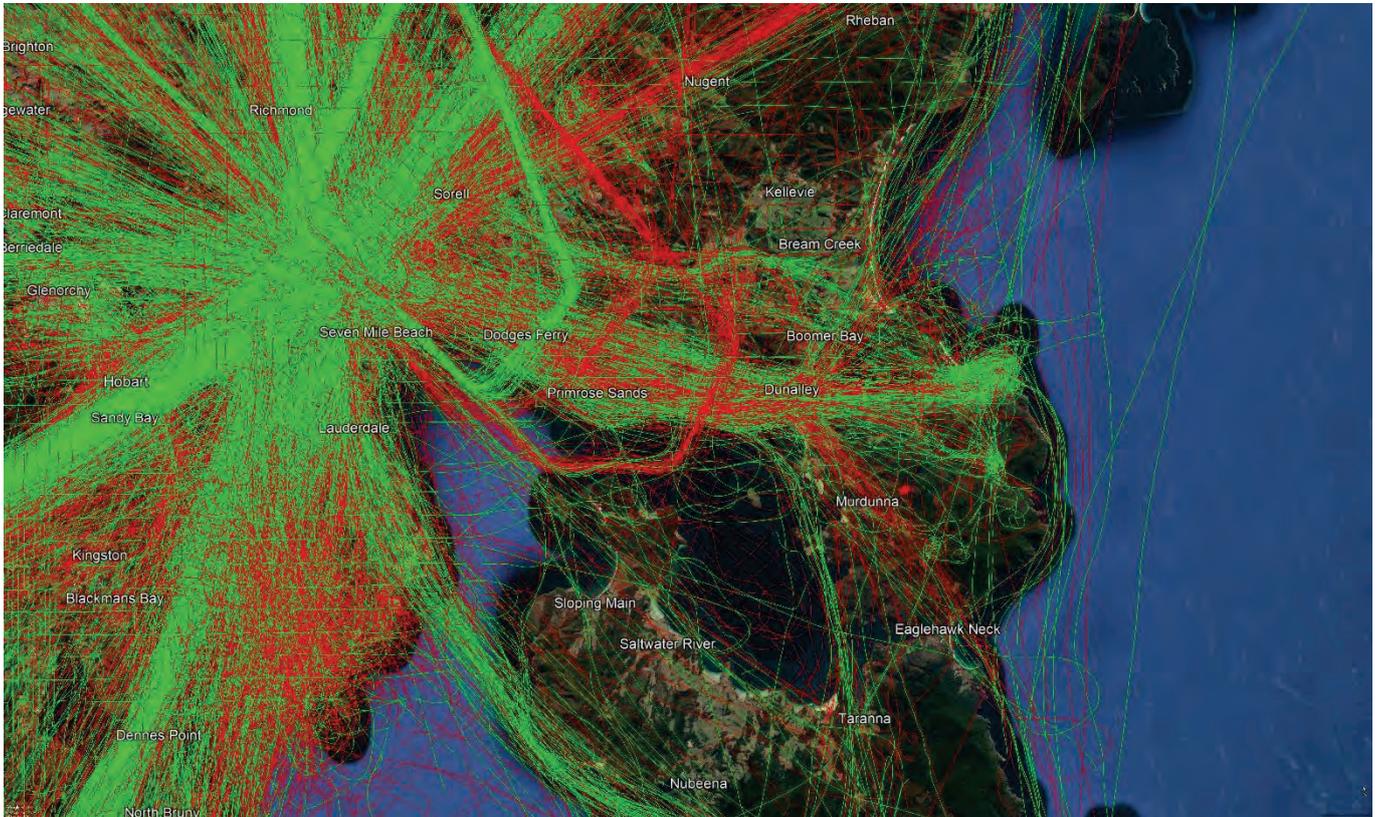


Figure 15 Cambridge Airport arrivals and departures aircraft tracks from 01/06/2022-31/05/2023

**Outcome:**

The NAP trial would reduce the impact on more densely populated areas, providing noise sharing opportunities with lower density areas. The distance of populated areas from the proposed NAP trial location (RNAV), while still potentially producing noticeable operations, is far greater than the distance of populated areas to the current RNP-AR operations. All areas appear to be affected by operations from other aerodromes.

Implementing a NAP trial meets the objective of the principle. Retaining current operations does not meet the objective of this principle.

*5.3.4 Where noise exposure is unavoidable, consider Noise Abatement Procedures that adjust aircraft operations to reduce noise impacts, including consideration of the time of these operations*

**Objective:**

Communities near airports may be sensitive to operations at different times of the day and night. To minimise the noise impacts on these communities NAPs may include requirements regarding time of operations or nominating the preferred runway use. In all cases, safety considerations take priority over NAPs.

**Assessment:**

The NAPs trial community survey conducted in November and December 2022 considered a variety of suggested NAPs times. The table below maps out the net effect of each suggested NAP in terms of aircraft movement numbers for each approach.

Traffic distribution is based on historic traffic (01/06/2022-31/05/2023). Traffic numbers are indicative of future traffic splits whilst traffic levels are subject to change with continued COVID recovery and other commercial forces.

Community suggested NAP preferences	RNP-AR/Visual approach aircraft movements (avg/day)	RNAV aircraft movements (avg/day)	Net impact to noise impacts
<b>Current operations</b>	14.25 (80%)	3.63 (20%)	Aircraft movements not equally shared
<b>7am-2pm</b>	5.42 (30%)	12.46 (70%)	Aircraft movements not equally shared
<b>7am-10pm</b>	0.39 (2%)	17.48 (98%)	Aircraft movements not equally shared
<b>2pm-10pm</b>	9.22 (52%)	8.65 (48%)	Aircraft movements are more equitably shared
<b>Overnight (6pm-6am)</b>	11.13 (62%)	6.75 (38%)	Aircraft movements not equally shared
<b>Full day (6am-11pm)</b>	0.07 (0%)	17.81 (100%)	Aircraft movements not equally shared
<b>24 hours</b>	0.00 (0%)	17.88 (100%)	Aircraft movements not equally shared
<b>7pm-10pm and 6am-8am</b>	11.47 (64%)	6.41 (36%)	Aircraft movements not equally shared
<b>11pm-6am</b>	14.18 (79%)	3.70 (21%)	Aircraft movements not equally shared
<b>2pm-8am</b>	8.19 (46%)	9.69 (54%)	Aircraft movements are equally shared

Table 4 RWY30 traffic distribution based on historic traffic between 01/06/2022 and 31/05/2023 for different time periods

We have assessed the preferred NAP trial times identified through community engagement against the aircraft movement numbers identified above.

A NAP trial to take effect between the hours of 2pm and 10pm and between 2pm and 8am would each achieve a more equitable split of aircraft operations between the RNP-AR and the RNAV.

Implementing a NAP which redirects traffic from the RNP-AR to the RNAV during the hours of 7am to 10pm does not result in equitable noise sharing. Further review against this principle will therefore focus on the 2pm and 10pm, and 2pm and 8am time periods.

In addition to assessing aircraft movement numbers based on historic data, which averages out the aircraft movements over a full 12-month period, we have considered a 90<sup>th</sup> percentile ‘busy day’, to understand potential total movement numbers on each approach during unusually high traffic periods.

On a busy day, 36 flights can be expected to approach RWY30 using either the RNP-AR or RNAV approach. Using the percentage splits from table 4 to calculate how many aircraft would use each approach, we can expect the following aircraft movements on each approach on this busy day:

<b>Busy day approach to RWY30</b>	<b>RNP-AR/Visual approach Indicative aircraft movements on a busy day</b>	<b>RNAV aircraft approach Indicative movements on a busy day</b>	<b>Net impact to noise impacts on a busy day</b>
<b>Current operations</b>	28.8 (80%)	7.2 (20%)	Aircraft movements not equally shared
<b>2pm-10pm</b>	18.72 (52%)	17.28 (48%)	Aircraft movements are equally shared
<b>2pm-8am</b>	16.56 (46%)	19.44 (54%)	Aircraft movements are equally shared

*Table 5 90th percentile busy day projections of usage of each approach path*

Figure 16 and Figure 17 below illustrate changes to the number of events above 60dB(A) within the N60 contours for each proposed scenario.

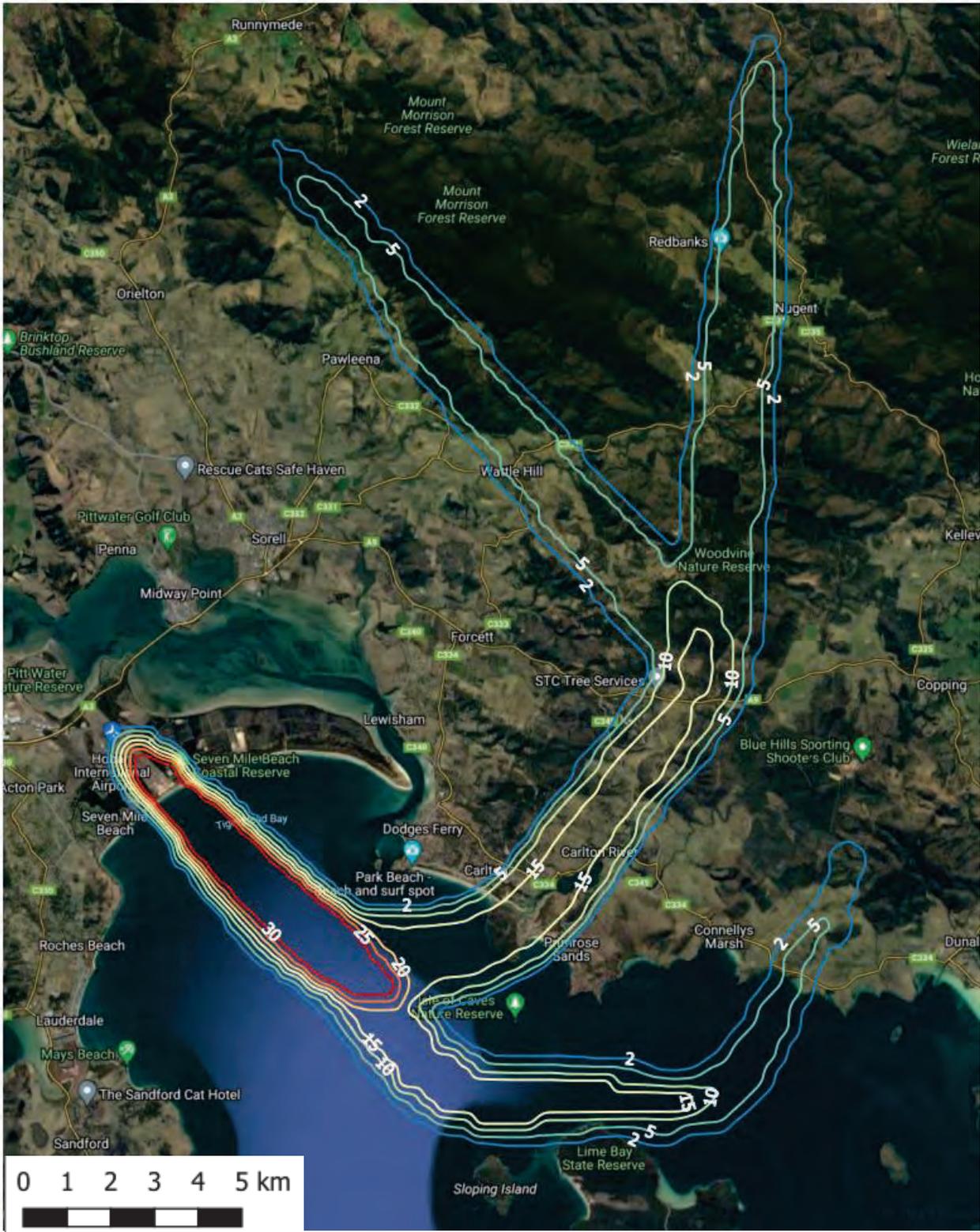


Figure 16 Proposed NAP trial 2pm to 8am N60 Noise Contours



Figure 17 Proposed NAP trial 2pm-10pm N60 Contours.

When considering noise sensitive and heritage listed sites, the N60 noise contours for each proposed scenario are as follows:

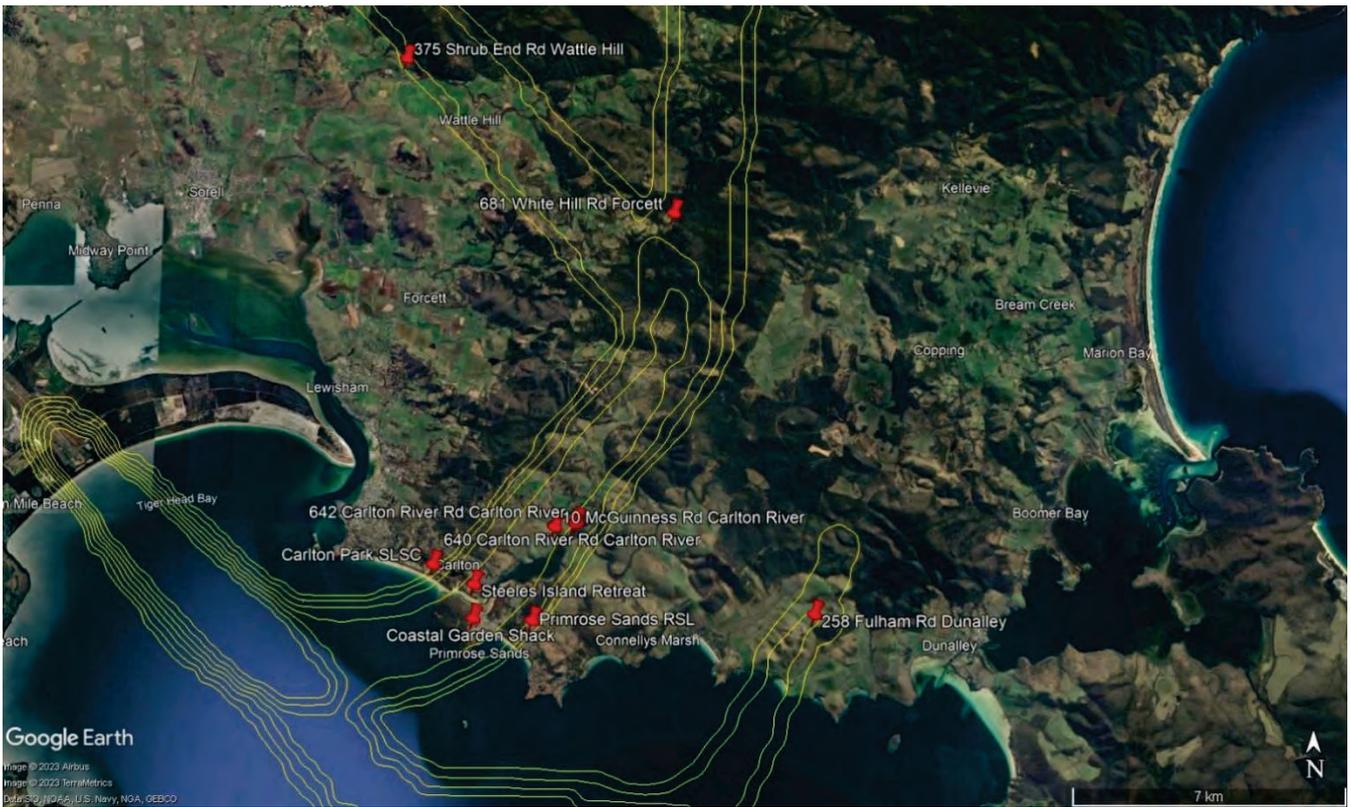


Figure 18 Proposed NAP trial 2pm-8am N60 contours with noise sensitive and heritage listed sites

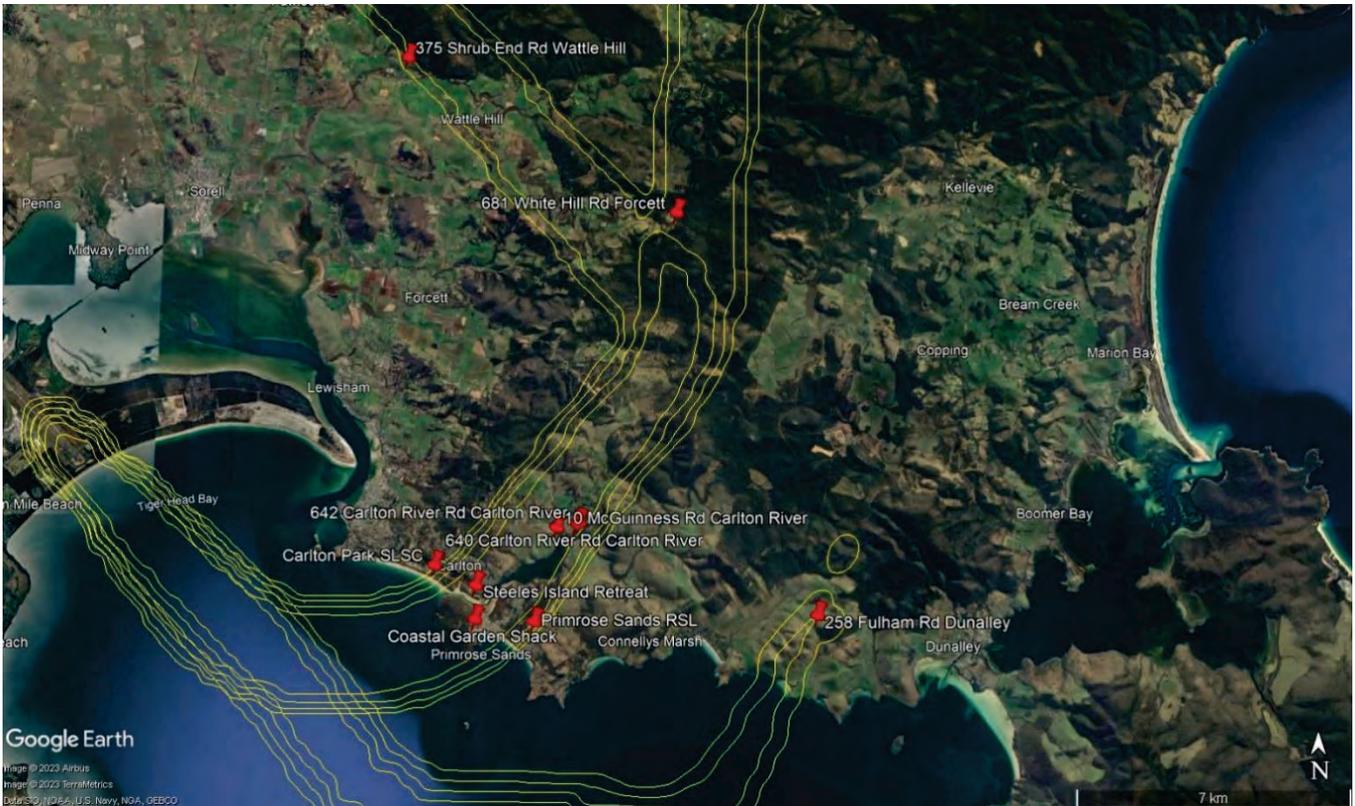


Figure 19 Proposed NAP trial 2pm-10pm N60 contours with noise sensitive and heritage listed sites

By introducing a NAP, the number of noise events over a 24-hour period which are above 60 decibels change for some noise sensitive and heritage listed properties. The change in impacts for each scenario are listed below.

Number of events above 60dB(A) in 24-hour period	Current operations	Proposed NAP 2pm-10pm	Proposed NAP 2pm-8am
<b>Steeles Island Retreat</b>	Up to 25 events	Up to 15 events (reduction of up to 10 events)	Up to 15 events (reduction of up to 10 events)
<b>Primrose Sands RSL</b>	Between 5 and 9 events	No change	No change
<b>Carlton River B&amp;B</b>	Between 20 and 24 events	Up to 15 events (reduction of up to 9 events)	Between 10 and 14 events (reduction of up to 10 events)
<b>Redbanks Fish and Field</b>	Up to 5 events	Up to 5 events (no change)	Up to 5 events (no change)
<b>Coastal Garden Shack</b>	Up to 25 events	Up to 15 events (reduction of up to 10 events)	Up to 15 events (reduction of up to 10 events)
<b>Carlton Park Surf Life Saving Club</b>	Between 5 and 9 events	5 events (reduction of up to 4 events)	Between 2 and 5 events (reduction of up to 7 events)
<b>375 Shrub End Road, Wattle Hill</b>	Between 2 and 4 events	Between 2 and 4 events (no change)	Up to 2 events (reduction of 2 events)
<b>681 White Hill Road, Forcett</b>	Up to 15 events	Up to 10 events (reduction of up to 5 events)	Up to 10 events (reduction of up to 5 events)
<b>10 McGuinness Road, Carlton River</b>	Up to 25 events	Up to 15 events (reduction of up to 10 events)	Up to 15 events (reduction of up to 10 events)
<b>640 Carlton River Road, Carlton River</b>	Between 20 and 24 events	Up to 15 events (reduction of up to 9 events)	Between 10 and 14 events (reduction of up to 10 events)
<b>258 Fulham Road, Dunalley (dwelling on this property is not within N60 contour)</b>	Up to 2 events	Between 2 and 4 events (increase of up to 2 events)	Up to 5 events (increase of up to 3 events)

Table 6 Number of events above 60dB(A) in a 24-hour period for identified noise sensitive sites

Introducing a NAP between the hours of 2pm and 8am will significantly reduce the number of noise events above 60dB(A) (up to 10 events in a 24-hour period) for properties along the Carlton River and in the Primrose Sands area, including the heritage listed property at 640 Carlton River Road. A NAP between the hours of 2pm and 10pm will result in somewhat of a reduction in noise events, however not as substantial as a NAP between 2pm and 8am.

When considering the density of dwellings within the flight path corridor, the image below shows population density within the N60 contour for a NAP between the hours of 2pm and 8am.



Figure 20 Proposed NAP 2pm-8am N60 Contours. Pink indicates residential density

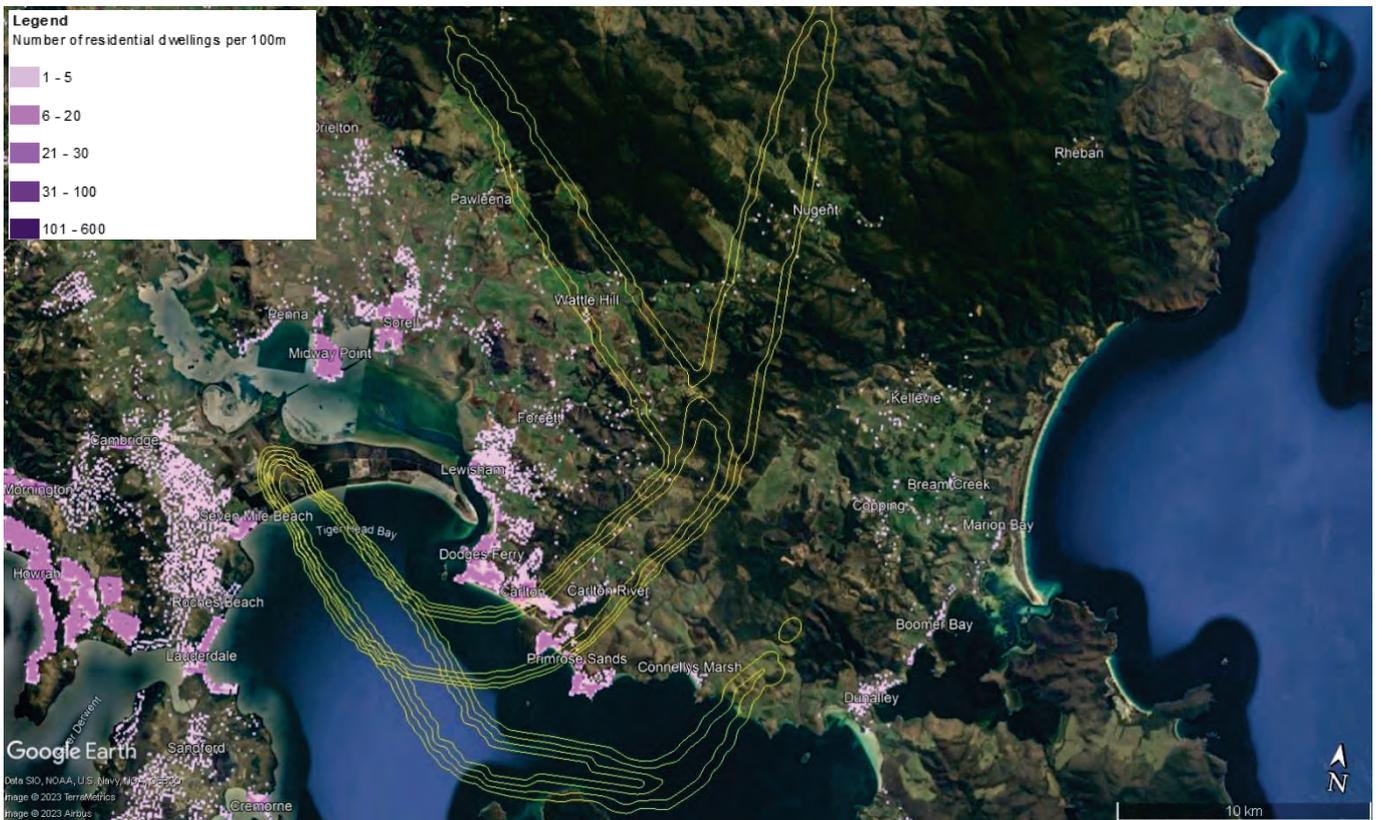


Figure 21 Proposed NAP 2pm-10pm N60 Contours. Pink indicates residential density

As Figure 20 and Figure 21 shows, there are no built-up residential areas within the N60 contour for the RNAV approach under both possible NAP trial options, however there is considerable density of residential dwellings under the RNP-AR approach. By introducing a NAP from 2pm to 8am, this population is provided with significant relief of noise events above 60dB(A).

The table below demonstrates the number of population and dwellings which fall within the N60 contours for each NAP option, noting properties outside of this contour may still notice operations at a lower noise level.

	Population		Dwellings	
	RNP-AR	RNAV	RNP-AR	RNAV
<b>Current operations</b>	1,740	Nil	1,023	Nil
<b>NAP option 2pm-10pm</b>	1,645	Nil	972	Nil
<b>NAP option 2pm-8am</b>	1,619	Nil	959	Nil

Table 7 Population and dwelling counts for each proposed NAP option, divided into RNP-AR and RNAV approach paths

**Outcome:**

A NAP trial between the hours of 2pm and 8am provides improved outcomes for residential and heritage listed properties under the RNP-AR path. There are no built-up residential areas or heritage listed properties in the N60 contours for the RNAV approach. The townships of Connelys Marsh and Dunalley are outside of the N60 noise contours for both existing and proposed operations under a NAP trial from 2pm to 8am (see Figure 5 and Figure 20).

Implementing a NAP trial between 7am and 10pm does not achieve an equitable noise sharing outcome.

Implementing a NAP trial between 2pm and 8am, and between 2pm and 10pm, meets the objective of the principle, noting greater benefits to populations impacted and sensitive sites are achieved through the 2pm to 8am time period. The 2pm to 8am time period also addresses feedback recorded in the Final PIR Report requesting respite from night-time operations on approach to RWY 30.

Retaining current operations does not meet the objective of this principle.

*5.3.5 Consider current and expected future noise exposure when designing flight paths*

**Objective:**

Consider the noise impacts of proposed flight path changes taking into account long term forecasts of future noise levels around airports, as presented in the Australian Noise Exposure Forecast (ANEF) charts.

**Assessment:**

Air traffic forecast data from the Hobart Airport Preliminary Draft Master Plan 2022 indicates an estimate of 7 arriving and 7 departing aircraft movements in the busy hour in 2028. This increases to 10 arrivals and 10 departures in the busy hour in 2040. This is compared to 3 arriving and 3 departing aircraft movements in the busy hour during 2021 (COVID impacts in 2020-2022).

Figure 22 below provides ANEF data from the Hobart Airport Preliminary Draft Master Plan 2022. As the ANEF level increases, less types of development are acceptable. Developments such as residential, schools, universities, hospitals, nursing homes and public buildings are generally permitted by land use authorities in areas with less than 20 ANEF.



Figure 22 Long term (20 year) endorsed ANEF (2042). Source: Hobart Airport Master Plan 2022

Outcome:

Implementing a NAP trial will not alter the endorsed ANEF. Retaining current operations also does not change the endorsed ANEF.

## 5.4 Efficiency and environment

### 5.4.1 Consider Matters of National Environmental Significance, other sensitive habitats, and registered heritage sites

**Objective:**

Provide environmentally responsible services by minimising the environmental impact of aircraft operations. Airservices must comply with the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)* which seeks to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined as Matters of National Environmental Significance (MNES).

**Assessment:**

There are no world, commonwealth or national heritage listed sites within the N60 contours of each approach. Table 8 shows the ecological communities that may be within the RNP-AR and RNAV operations search area. There are two additional nationally threatened species under the RNAV approach to RWY30, namely the Ziebell's Handfish and Morrisby's Gum tree.

The impact on these species is unlikely to be changed with the introduction of the NAP given they are already exposed to existing operations.

<b><i>Ecological communities that may be within the RNP-AR operations search area (5km either side of the published flight path)</i></b>	<b><i>Ecological communities that may be within the RNAV operations search area (5km either side of the published flight path)</i></b>
Nationally threatened species: 70 Ecological communities: 6	Nationally threatened species: 72 Ecological communities: 6
Migratory species: 50	Migratory species: 50
Commonwealth marine areas: None	Commonwealth marine areas: None

*Table 8 Ecological communities that may be within the RNP-AR and RNAV operations search area (5km either side of the published flight path)*

**Outcome:**

Implementing a NAP trial does not change the current impact on Matters of National and Environmental Significance. Retaining current operations also does not change the current impact on Matters of National and Environmental Significance.

### 5.4.2 Design flight paths that deliver operational efficiency and predictability and minimise the effect on the environment through reducing fuel consumption and emissions

**Objective:**

Prioritise the use of performance-based navigation which uses the navigation capabilities of modern aircraft to enable more efficient airspace management solutions compared with conventional navigation. This objective seeks to maintain reliable all-weather operations even at challenging airports, while reducing congestion, helping conserve fuel, protecting the environment and reducing the impact of aircraft noise. This may include:

- Arrivals with Continuous Descent Operations which prevent aircraft having to use additional power to ‘level out’, reducing fuel burn and emissions
- Departures with Continuous Climb Operations which enable aircraft to reach their optimum flight level without interruption, reducing fuel burn and emissions
- Arrivals and departures with laterally predictable flight paths, speed restrictions and vertical separation requirements which allow aircraft operators, airlines and pilots to configure aircraft flight management systems for departures and arrivals in advance, reducing fuel burn and emissions
- ‘Smart Tracking’ approaches with curved flight paths, reducing aircraft flight time and track miles
- More direct flight paths for busier routes, resulting in greater net reductions in fuel and emissions

- ‘Race track’ route systems between cities to improve safety and efficiency of the air route network.

Assessment:

The impacts to overall track miles, fuel use and emissions (average per day) for each NAP scenario are as follows:

	<b>Additional Nautical Miles (NM) (ave/day)</b>	<b>Additional fuel use (ave/day)</b>	<b>Additional CO<sub>2</sub> emissions (ave/day)</b>
<b>2pm-8am</b>	36-48NM	152kg-273kg	479kg-861kg
<b>7am-2pm</b>	53-71NM	221kg-397kg	698kg-1254kg
<b>7am-10pm</b>	83-111NM	346kg-623kg	1094kg-1967kg
<b>2pm-10pm</b>	30-40NM	126kg-226kg	397kg-713kg
<b>6pm-6am</b>	19-25NM	78kg-140kg	246kg-443kg
<b>6am-11pm</b>	85-113NM	355kg-638kg	1120kg-2014kg
<b>24 hours</b>	86-114NM	356kg-641kg	1126kg-2024kg
<b>7pm-10pm and 6am-8am</b>	17-22NM	70kg-125kg	220kg-395kg
<b>11pm-6am</b>	0-1NM	2kg-3kg	6kg-10kg

Table 9 Impacts to fuel emissions and CO<sub>2</sub> emissions (average per day) for all NAP scenarios, using historical data from 01/06/2022-31/05/2023

Fuel consumption and CO<sub>2</sub> emissions would increase as a result of the NAP trial, due to the longer approach procedure.

The relative impact to fuel consumption and CO<sub>2</sub> emissions is similar for the preferred 2pm-10pm and a 2pm-8am NAP time period. The 7am-10pm would have a significant impact on fuel emissions and CO<sub>2</sub> emissions. Retaining current operations would result in no increase to fuel consumption and CO<sub>2</sub> emissions.

Outcome:

Implementing a NAP trial does not meet the objective of this principle. Retaining current operations does meet the objective of the principle.

**5.5 Operational**

*5.5.1 Design flight paths to facilitate access to all appropriate airspace users.*

Objective:

Flight paths and airspace design must accommodate the range of airspace users, which can include both flying and non-flying activities. Flying operations can include scheduled flight operations, military, emergency, freight, charter, helicopter, drones, and general and recreational aviation flights. Non-flying activities can include weapons firing, explosive demolition, and protection of areas of national security. Flight paths for Instrument Flight Rules (IFR) operations subject to Air Traffic Control (ATC) must be located in controlled airspace, taking into account applicable navigation tolerances and required safety buffers.

Assessment:

The proposed NAP trial does not remove any procedures used by exiting aircraft and maintains access for all airspace users.

Outcome:

Implementing a NAP trial meets the objective of the principle, as does retaining current operations.

### 5.5.2 Consider flight paths that optimise airport capacity and meet future airport requirements

#### Objective:

Optimise capacity to improve efficiency and use of existing infrastructure. Design and development of airspace management solutions for new infrastructure, including new runways and airport.

#### Assessment:

Diverting all arriving aircraft onto one approach path may result in slower aircraft delaying faster following aircraft. This can also result in aircraft holding at waypoint PIDOS (see image below) or smaller aircraft positioning further to the east while waiting to join the approach (thus increasing controller workload). Emergency aircraft (typically slower aircraft types) taking priority may also result in more aircraft holding at waypoint PIDOS.

Aircraft are expected to hold at approximately 4,000ft at waypoint PIDOS. There is no holding pattern at waypoint IPLET however a pattern can be defined as needed, and would be in the 10,000-13,000ft altitude range. Aircraft may also hold at MORGO (see Figure 23 below) at between approximately 13,000 and 16,000ft. Due to the need for reactivity and flexibility in busy situations requiring holding, it is necessary to first utilise holding patterns closer to the aerodrome. An aircraft holding at PIDOS can commence an approach within three minutes of one becoming available, from IPLET this takes around eight minutes and from MORGO around 13 minutes. Removing the use of the RNP-AR thus reduces the ability for controllers to efficiently manage arrivals and may increase fuel emissions.

It should be noted that the relatively low traffic volumes at Hobart Airport (37 movements on a busy day) will likely mean holding is not a frequent requirement based on current traffic levels. This could increase in the future, however.

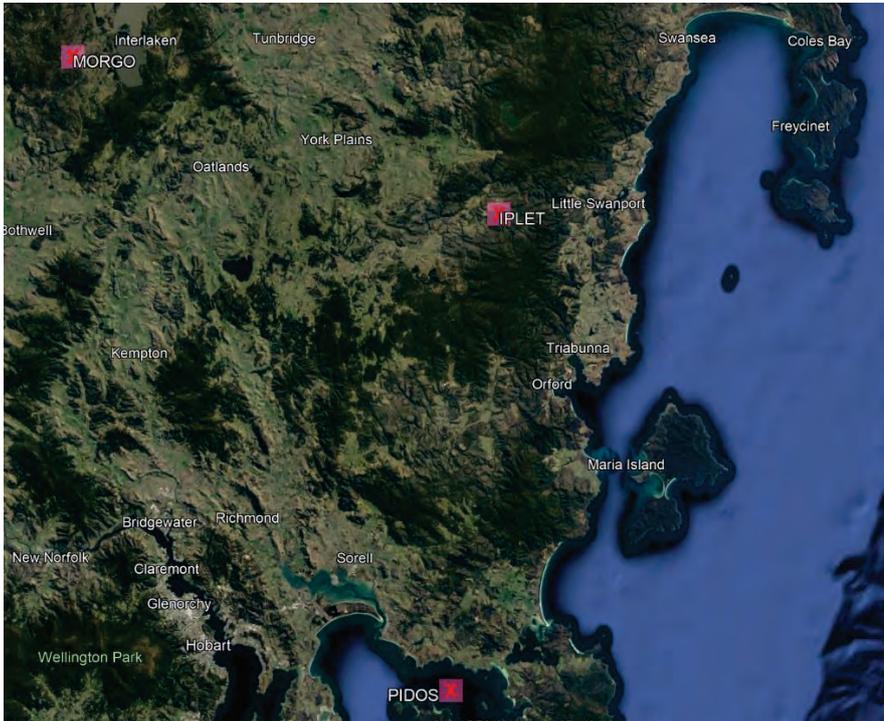


Figure 23: Waypoints PIDOS, MORGO and IPLET

#### Outcome:

Implementing a NAP trial does not seek to optimise airport capacity or meet future airport requirements and does not meet the objective of this principle.

### 5.5.3 Consider flight paths that optimise overall network operations, including consideration of operations at adjacent airports

#### Objective:

Airservices is responsible for managing the overall efficiency of air traffic network operations within Australia. Growth in air traffic impacts the effectiveness and efficiency of existing services, air routes and flight paths, while increased demand at major airports influences the overall performance of the air traffic network. Airservices facilitates and supports

improvements to network efficiency to ensure predictability of aircraft movements, optimise aircraft sequencing, and enhance overall network operations.

*Assessment:*

Both the RNP-AR and RNAV approaches are currently in use. As noted in the previous principle, reducing the use of the RNP-AR during certain times of the day may result in increased congestion, greater requirement for aircraft to hold, higher fuel emissions, passenger delays, increased strain on controller workload, and overall lower efficiency in network operations. The comparatively low traffic movements at Hobart Airport will likely mean the NAP trial does not create significant network issues.

The two options under consideration (being 2pm-8am and 2pm-10pm) apply to afternoon and evening operations, therefore have a lesser impact on network operations compared to a daytime NAP.

*Outcome:*

Implementing a NAP trial does not optimise the overall network operations and does not meet the objective of this principle.

*5.5.4 Consider innovation and technology advancements in navigation and aircraft design*

*Objective:*

Support the emergence of new aviation technology by providing flight paths for enhanced navigation and aircraft design. This may include changes to existing aircraft such as the use of satellite-based navigation systems, or catering to new aircraft types. Advancements in navigation performance have enabled changes in airspace design, separation standards, route spacing, airport access, instrument flight procedure design and Air Traffic Management.

*Assessment:*

The suggested NAP will reduce use of the RNP-AR approach to RWY30, which is not in the interest of increased innovation and utilisation of currently available technological advancements. Fleets that have already been upgraded will not be able to maximise the capabilities of their advanced on-board technology.

Use of the RNP-AR will continue as normal during non-NAP hours.

*Outcome:*

Implementing a NAP trial does not enable use of new technologies and does not meet the objective of this principle.

## 6. Summary of Assessment Outcomes

Three options were identified through the feedback gathered via the community survey on a suitable time for a NAP trial (as noted in section 2 of this document). The assessment of each of these options is as follows.

Proposal: NAP trial from 2pm to 8am

- Possible support of 33 per cent of overall survey respondents
- Provides a more equitable split of aircraft operations between the RNP-AR and the RNAV approaches (RNP-AR 46%, RNAV 54%).
- Under existing operations, flights arriving to RWY30 at night predominantly use the RNAV approach and therefore the NAP trial would not significantly increase flights using the RNAV at night (between 11pm and 6am)
- Reduction of up to 10 events (per 24 hours) in the N60 contours for Tasmanian Heritage Register listed properties and noise sensitive sites
- 121 people are removed from the N60 contours (compared to current operations)
- 64 dwellings are removed from the N60 contours (compared to current operations)
- Results in between 36 and 48 additional NM flown on average per day (compared to current operations)
- Results in between 152kg and 273kg additional fuel use on average per day (compared to current operations)
- Results in between 478kg and 861kg additional CO<sub>2</sub> emissions on average per day (compared to current operations)

Proposal: NAP trial from 7am to 10pm

- Possible support of 27 per cent of overall respondents
- Does not achieve the objective of Recommended Action 5 of the PIR, in that it does not create an equitable split of aircraft movements between the RNP-AR and the RNAV approaches (RNP-AR 2%, RNAV 98%)

- Does not respond to community feedback through the PIR process, whereby community suggested RWY30 arrivals to use RNAV approach at night (between 11pm and 6am)
- Results in between 83 and 111 additional NM flown on average per day (compared to current operations)
- Results in between 346kg and 623kg additional fuel use on average per day (compared to current operations)
- Results in between 1094kg and 1967kg additional CO<sub>2</sub> emissions on average per day (compared to current operations)

Proposal: NAP trial from 2pm to 10pm

- Possible support of 12 per cent of overall respondents
- Provides a more equitable split of aircraft operations between the RNP-AR and the RNAV approaches (RNP-AR 52%, RNAV 48%)
- Does not respond to community feedback through the PIR process, whereby the community suggested RWY30 arrivals to use RNAV approach at night (between 11pm and 6am)
- Reduction of up to 10 events (per 24 hours) in the N60 contours for Tasmanian Heritage Register listed properties and noise sensitive sites
- 95 people are removed from the N60 contours (when compared to current operations)
- 51 dwellings are removed from the N60 contours (when compared to current operations)
- Results in between 30 and 40 additional NM flown on average per day (compared to current operations)
- Results in between 126kg and 226kg additional fuel use on average per day (compared to current operations)
- Results in between 397kg and 713kg additional CO<sub>2</sub> emissions on average per day (compared to current operations)

Introducing a NAP trial at any time period does not utilise technological advancements to aircraft capabilities, optimise airport capacity, or overall network operations.

It is acknowledged that 47 percent of respondents to the engagement program noted a preference to retain current operations.

It is also noted that of those who preferred a NAP trial, the majority preference a six-month trial period.

The following table shows the performance of all three NAP options against the objective of each Flight Path Design Principle.

1 = does not meet the objective of the principle

3 = neutral outcome against the objective of the principle

5 = meets the objective of the principle

Report reference	No change	2pm to 8am	7am to 10pm	2pm to 10pm
Section 5.1 Intent of the PIR recommendation	1	5	5	5
Section 5.2.1 Safety of air navigation must be the most important consideration	5	5	5	5
Section 5.2.2 Flight path design must comply with Australian and International design standards and cater for the range of aircraft that will operate on the flight paths	5	5	5	5
Section 5.3.1 Consider concentrating aircraft operations to avoid noise sensitive sites	1	5	5	5
Section 5.3.2 Consider potential impacts on social, economic, and cultural values of communities and	5	5	5	5

locations, including Indigenous and other heritage places				
Section 5.3.3 Where high-density residential areas are exposed to noise, consider flight path designs that distribute aircraft operations, so that noise can be shared	1	5	5	5
Section 5.3.4 Where noise exposure is unavoidable, consider Noise Abatement Procedures that adjust aircraft operations to reduce noise impacts, including consideration of the time of these operations	1	5	1	3
Section 5.3.5 Consider current and expected future noise exposure when designing flight paths	3	3	3	3
Section 5.4.1 Consider Matters of National Environmental Significance, other sensitive habitats, and registered heritage sites	3	3	3	3
Section 5.4.2 Design flight paths that deliver operational efficiency and predictability and minimise the effect on the environment through reducing fuel consumption and emissions	5	3	1	3
Section 5.5.1 Design flight paths to facilitate access to all appropriate airspace users	3	3	3	3
Section 5.5.2 Consider flight paths that optimise airport capacity and meet future airport requirements	5	1	1	1
Section 5.5.3 Consider flight paths that optimise overall network operations, including consideration of operations at adjacent airports	5	3	1	3
Section 5.5.4 Consider innovation and technology advancements in navigation and aircraft design	5	1	1	1
<b>Total</b>	<b>48</b>	<b>52</b>	<b>44</b>	<b>50</b>

Table 10 Summary of assessment outcomes

## 7. Recommendation

Based on the above analysis, which includes consideration of community inputs, review against the intent of the PIR recommendation and assessment against Airservices Australia's Flight Path Design Principles, it is recommended that **a NAP trial between the hours of 2pm and 8am proceed for a period of six months.**

This proposed NAP would result in a fairer split of operations, addressing the difference between modelled and actual operations for RNP-AR communities, still resulting in less than modelled and communicated operations for RNAV communities. It also reduces number of events over 60 decibels over populated areas, the number of dwellings and noise sensitive sites affected, and the impact of night-time operations on populations. The shift of night-time operations will not impact new communities, as the RNAV is currently used for the majority of these operations and does not directly overfly communities.

It is acknowledged that communities adjacent to the RNAV approach may notice the increase in operations, but this will be at lower traffic levels than those forecast in the earlier EIA and at lower noise levels than those experienced by RNP-AR communities due to the distance between the RNAV approach and the nearest population.

During the NAP trial period feedback will be taken from the community on the change in operations and experience of noise. Noise monitoring will be implemented during the trial period to support assessment of the trial along with feedback received. Further engagement at the completion of the trial will be undertaken prior to any decision to cease, amend the trial, or implement the NAP permanently.

Exclusions to the proposed NAP trial include emergency services operations and other priority aircraft. Aircraft will also be exempt from using the NAP if safety, weather conditions or other operational requirements apply. Examples of this may include situations where:

- Aircraft are being used for or in connection with:
  - a search and rescue operation
  - a medical emergency
  - a natural disaster
- The pilot of the aircraft has declared an in-flight emergency
- The aircraft has insufficient fuel to be diverted to another flightpath
- There is an urgent need for the aircraft to land or take-off:
  - to ensure the safety or security of the aircraft or any person, or
  - to avoid damage to property.

Outside of Air Traffic Control (ATC) hours, aircraft operators have greater flexibility and may not apply the NAP, however Airservices will utilise the En Route Supplement Australia (ERSA) to provide aircraft operators information on which approach to use. We will engage with industry on operational requirements that do not adhere to the NAP intent and to gain feedback on operations.

## 8. Decision

All proposed changes to airspace operations, must go to the delegated decision-maker within Airservices following assessment. It is the delegate's role to consider the proposed change, what it is seeking to achieve, its implications for operations, and the assessment findings as they relate to the purpose of the proposed change.

The decision-maker's response to this proposed change and the assessment as presented is documented below.

Despite significant effort to investigate possible change from both a technical and community outcomes perspective, the work conducted has not provided a compelling case that on balance that there is any material community demand and/or significant benefit in making further change. Specifically:

- Engagement with the community resulted in 53% vs 47% desiring the change
- No possible change has been identified that drives any material environmental/noise benefit, particularly when balanced with emissions outcomes
- Airservices obligations require that safety is always our first priority. There is an absence of a material driver from an environmental/community outcomes perspective against which to balance inherent risk associated with the introduction of further change to this airspace.

The population statistics in this document have been drawn from data available on the Australian Bureau of Statistics' website on 11 October 2023.

**Sorell**

Population 16,734



**Tasman**

Population 2,593

