

HOBART AIRSPACE DESIGN REVIEW

PROPOSED FLIGHT PATH DESIGNS

Airservices has undertaken a review of the Hobart Airspace as a 'greenfield approach' with safety of air navigation as the primary consideration.

WHY DID WE NEED A REVIEW?

Airservices introduced changes to arrival and departure flight paths at Hobart Airport on 14 September 2017. The changes were designed to organise aircraft departing from, or arriving into, Hobart Airport onto standard routes called Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs).

Following implementation, concerns were raised by the community. Airservices subsequently undertook to engage with the communities affected to provide feedback on a number of flight path alternatives, which may result in an improved noise outcome. Based on the feedback received, Airservices implemented a change to the Runway 30 Standard Instrument Arrivals (STAR) flight path in March 2018.

The [Hobart Runway 30 STAR Review Report](#) concluded that Airservices would commit to a further review of the Hobart Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs) and released [Terms of Reference \(TOR\)](#) to describe the objectives of that review.

WHAT HAS BEEN DONE TO DATE?

Airservices has undertaken a review of the Hobart Airspace using a 'greenfield approach', with safety of air navigation as the primary consideration.

Airservices has reviewed the design of the Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs) for Runway 12 and Runway 30.

This has included a review of the operability of the design implemented on

14 September 2017, and the changes to Runway 30 Standard Instrument Arrival (STAR) in March 2018.

Wherever possible, changes to the flight paths that would deliver safety enhancements have been identified and these have been balanced with minimising the effects of aircraft noise on the community, as far as practical.

CURRENT AIRSPACE DESIGN

The current flight path designs for Hobart are based on an integration of Standard Instrument Arrivals (STARs) and Standard Instrument Departures (SIDs), designed using advancements in Performance Based Navigation (PBN) technology to provide separation assurance between arriving and departing air traffic at Hobart. Performance Based Navigation is the internationally recognised regulatory framework for implementing area navigation.

Standard Instrument Departures (SIDs) connect departing aircraft from the runway to their routes that they will fly to their destination. Standard Instrument Arrivals (STARs) connect arriving aircraft from the overlying routes, to approaches to the runway. These can include satellite based area navigation approaches (RNAV) and required navigation performance approaches (RNP-AR, also known as 'Smart Tracking') which guide the aircraft to the runway in all weather conditions.

This allows improved management of aircraft operations by aircraft and air traffic control systems, reducing pilot and air traffic control workload and resulting in reduced fuel burn and lower emissions.

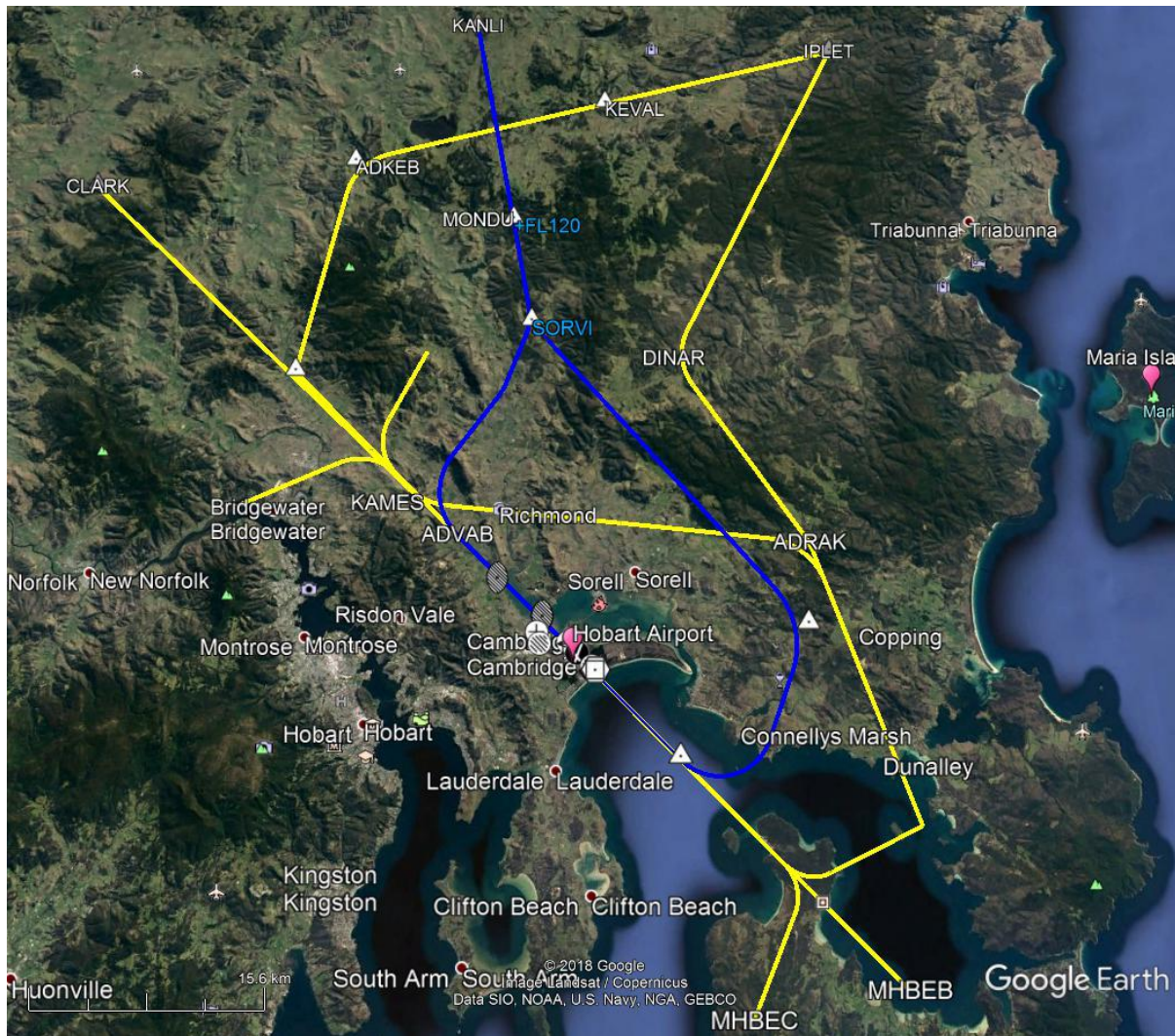


Figure 1: Current flight path design for Hobart Airport (March 2018)

- Standard Instrument Arrivals (STARs)
- Standard Instrument Departures (SIDs)

Hobart Airport has one runway, which is aligned northwest (known as Runway 30) to southeast (known as Runway 12). The current flight path designs at Hobart consist of one Standard Instrument Departure (SID) for all departing aircraft and two satellite based area navigation approaches (RNAV) Standard Instrument Arrivals (STARs) for arriving aircraft for both the Runway 30 and Runway 12 configurations (refer Figure 1). There is no Smart Tracking approach and all routes are over land.

The operational pattern at Hobart Airport is highly seasonal, due to the prevailing winds. In winter months the runway in operation is almost exclusively Runway 30, with aircraft departing and arriving in a north-westerly direction, into the wind. During summer months runway operations are more evenly distributed between both runway ends. This is because aircraft need to take-off and land into the wind.

Daily aircraft movements at Hobart range from 41 to 90 with an average of 62 aircraft movements per day. Figure 2 below depicts current (actual) flight tracks for Runway 12 from the last three months. Figure 3 below depicts current (actual) flight tracks for Runway 30 from the last three months. Arrows indicate direction of flight path.

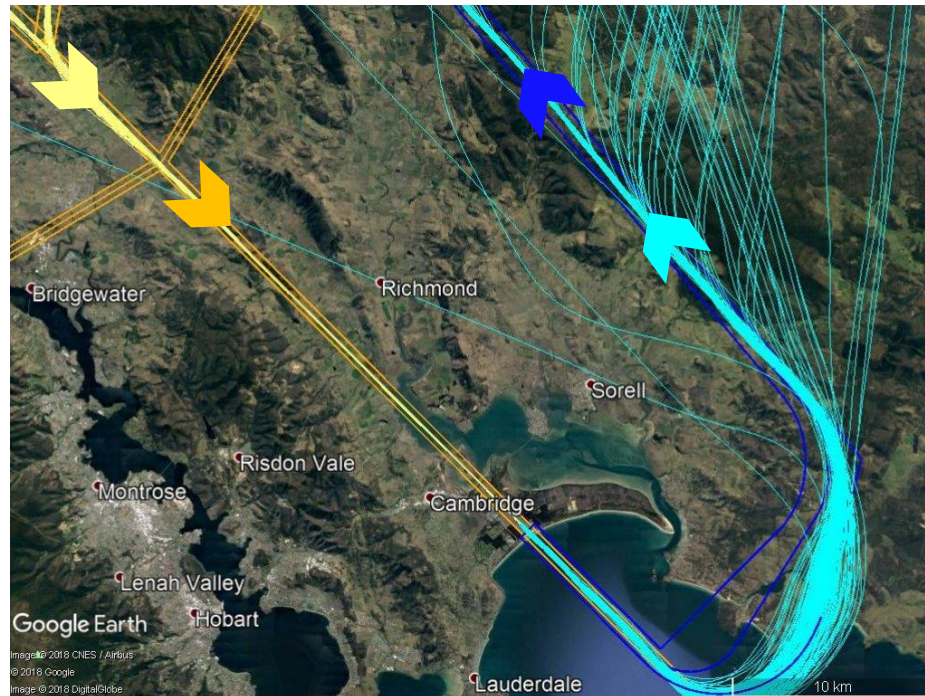


Figure 2: Daily Aircraft Movements at Hobart (Arrivals and Departures Runway 12)

— Current (Actual) Departure Tracks — Current (Actual) Arrival Tracks
— Current Arrival Flight Path Corridor — Current Departure Flight Path Corridor

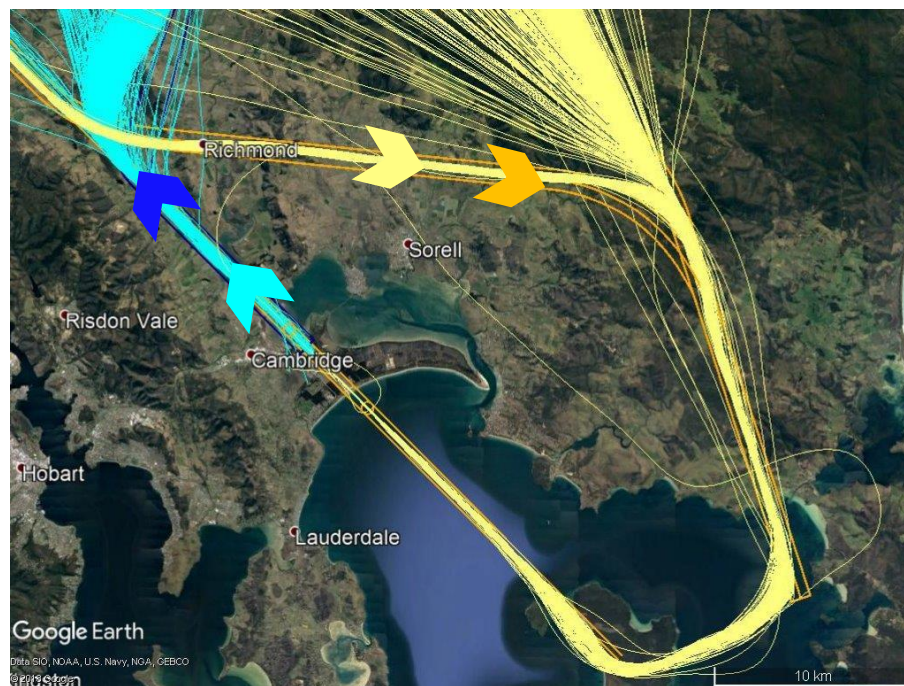


Figure 3: Daily Aircraft Movements at Hobart (Arrivals and Departures Runway 30)

— Current (Actual) Departure Tracks — Current (Actual) Arrival Tracks
— Current Arrival Flight Path Corridor — Current Departure Flight Path Corridor

PROPOSED AIRSPACE DESIGN

The proposed airspace design introduces separate Standard Instrument Departures (SIDs) for light aircraft and jet aircraft (Figures 4, 6 and 7). It also includes the introduction of Smart Tracking Standard Instrument Arrivals (STARs) approaches for Runway 12 and Runway 30. These are in addition to the satellite area navigation approaches (RNAV) currently in use for Runway 12 and Runway 30.

Smart Tracking aircraft fly with greater accuracy than those using conventional navigation means, providing vertical and lateral guidance. The satellite technology makes air travel safer, with fewer emissions and is more dependable in all weather conditions. Aircraft flying the Smart Tracking approach must meet regulatory standards for approval to fly this flight path. Most airlines in Australia have this approval.

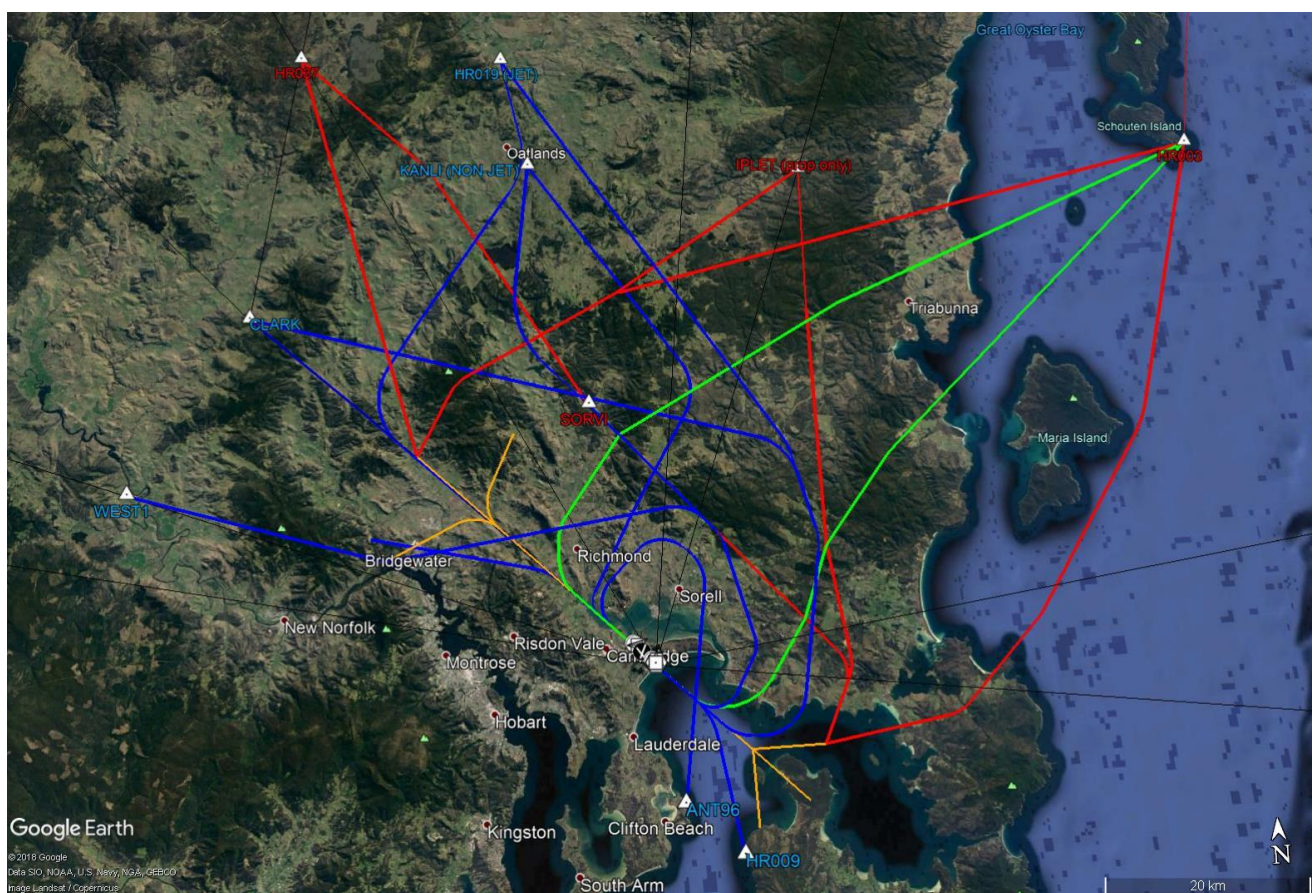


Figure 4: Proposed Hobart Airspace Design

- Standard Instrument Arrivals (STARs)
- Standard Instrument Departures (SIDs)
- Smart Tracking
- Existing satellite area navigation

WHAT ARE THE EXPECTED NOISE IMPACTS?

While there are a number of changes to flight paths across the proposed Hobart Airspace design, the likely noise impacts of greater than 60 decibels for more than 10 flights per day, is presented in Figure 5 below.

The noise modelling, using the Aviation Environment Design Tool (Federal Aviation Administration) in accordance with the Australian Standard (2021:2015)¹, was based on the expected noise levels of a Boeing 737-800 aircraft as they are the most common jet aircraft operating at Hobart Airport, closely followed by the Airbus A320.

Noise modelling did not include helicopters or Cambridge Airport operations as they do not fly Standard Instrument Departures (SIDs) and Standard Instrument Arrivals (STARs). The occasional Antarctic flight was also excluded, however it is recognised that each of these types of operations contribute to the noise environment around the general Hobart area.

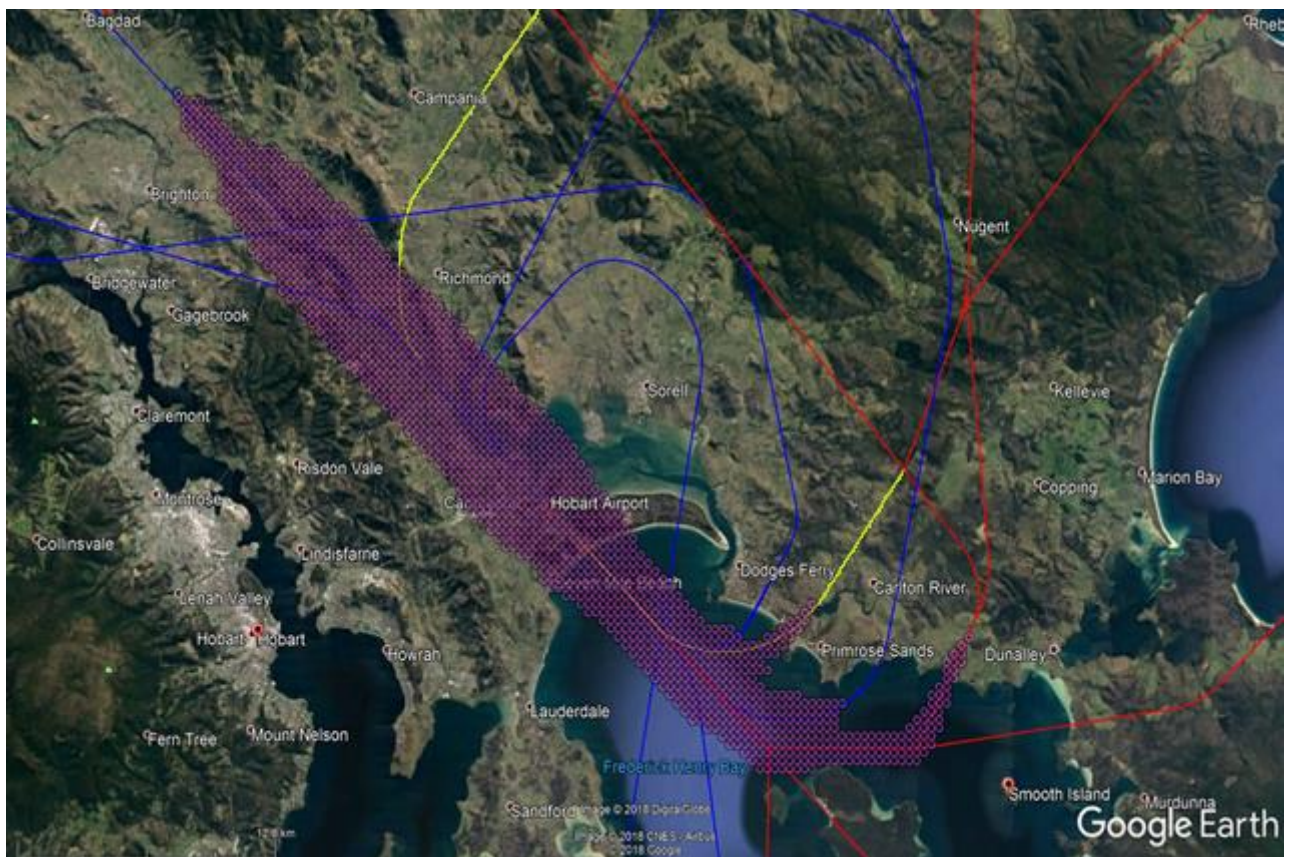


Figure 5: Proposed design noise modelling – more than 10 flights per day above 60 decibels

— Departures — Arrivals — Smart Tracking approaches ● number of events >60 decibels

¹ Australian Standard (2021:2015) - Acoustics—Aircraft noise intrusion— Building siting and construction

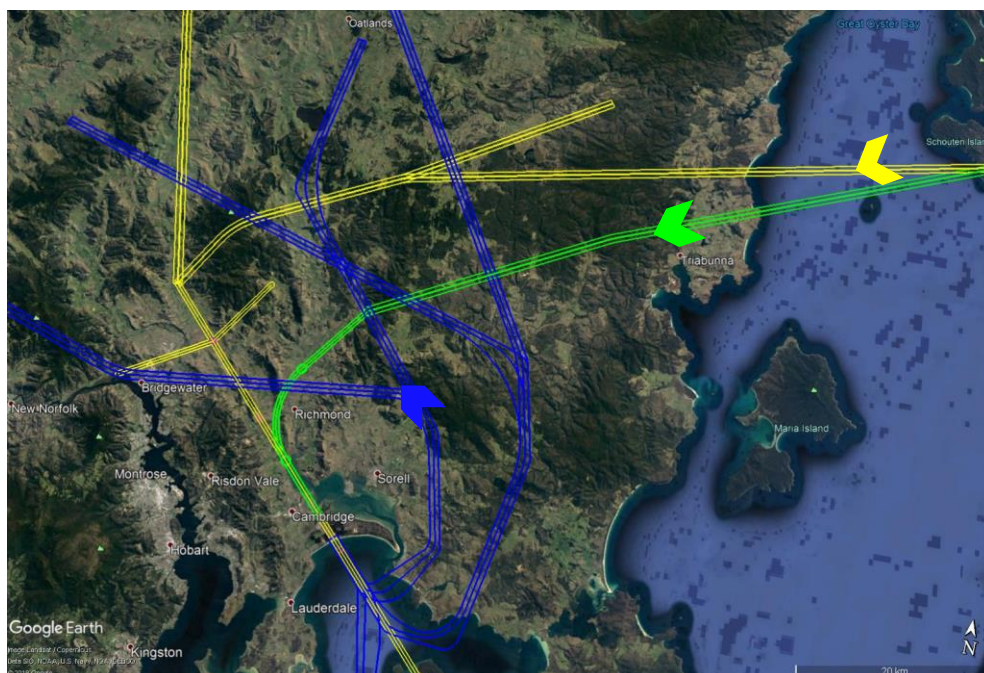


Figure 6: Runway 12 Operations – Arrivals and Departures (Arrows indicate direction of flight path)

- Standard Instrument Arrivals (STARs)
- Standard Instrument Departures (SIDs)
- Smart Tracking

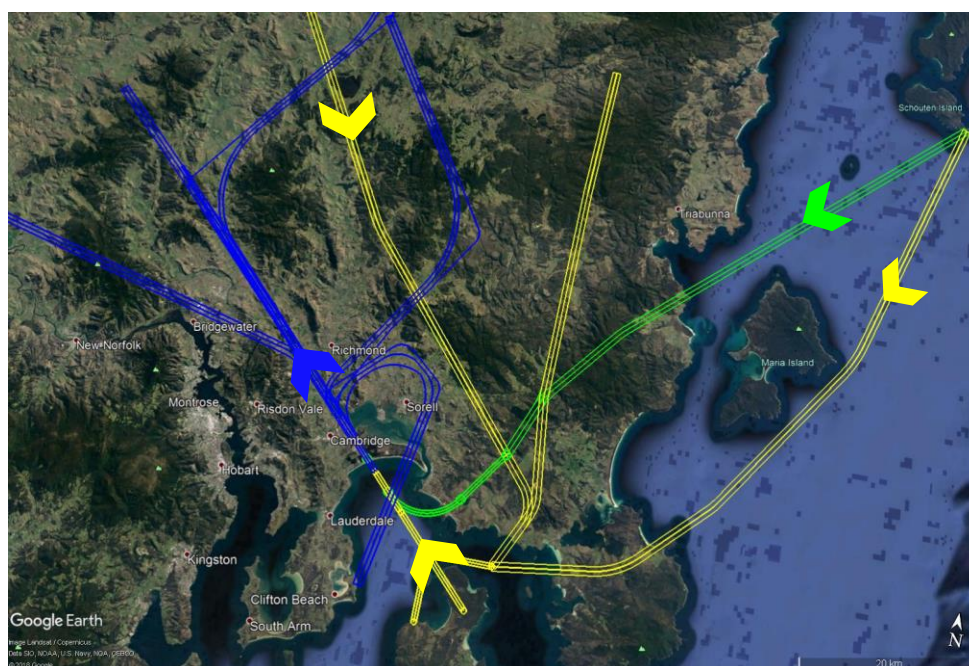


Figure 7: Runway 30 Operations Arrivals and Departures (Arrows indicate direction of flight path)

- Standard Instrument Arrivals (STARs)
- Standard Instrument Departures (SIDs)
- Smart Tracking

WHAT ARE THE KEY ELEMENTS OF THE PROPOSED DESIGNS?

While the current flight path design is safe, Airservices has identified opportunities to improve safety and noise outcomes for the community. The following are the key elements of the proposed flight path design:

Introduction of additional separated Standard Instrument Departures (SIDs) for turbo propeller and jet aircraft for both Runway 12 and Runway 30 (refer Figure 8)

This will deliver safety and environmental efficiency allowing aircraft to climb unrestricted, minimising fuel burn and aircraft noise.

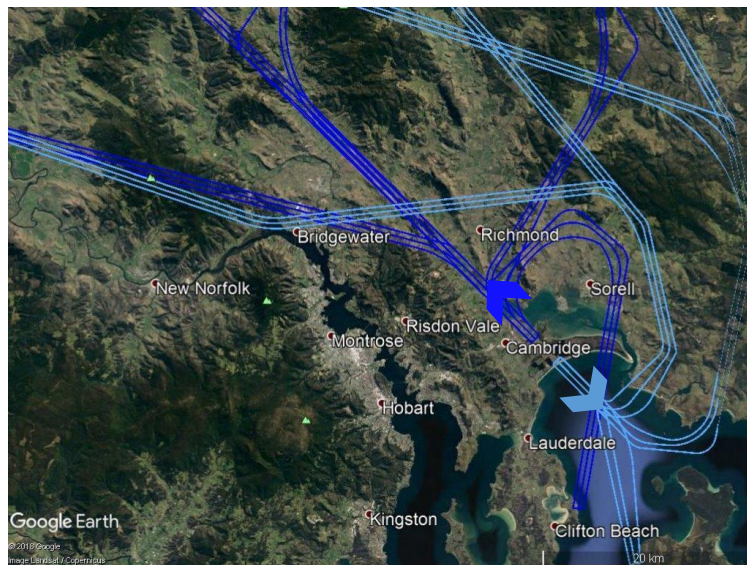


Figure 8: Standard Instrument Departures (SIDs) for Runway 12 and Runway 30 (Arrows indicate direction of flight path)

- Proposed northern departure flight path corridors
- Proposed southern departure flight path corridors.

Introduction of additional Standard Instrument Arrivals (STARs) for both Runway 12 and Runway 30 This will distribute flight paths through satellite based area navigation arrivals (RNAV) and satellite based required navigation performance approaches ('Smart Tracking'), including visual termination procedures (refer Figure 9).

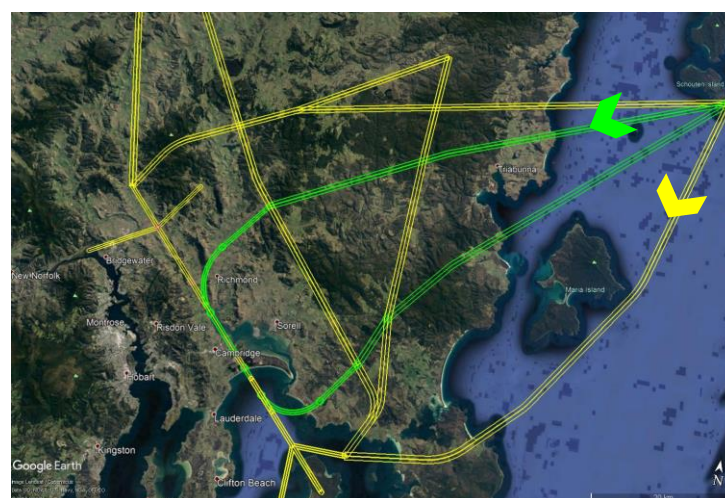


Figure 9: Standard Instrument Arrivals (STARs) for Runway 12 and Runway 30 (Arrows indicate direction of flight path)

- Proposed satellite based area navigation arrivals (RNAV) flight path corridors
- Proposed Smart Tracking approach flight path corridors.

A new easterly flight path off the coast of Tasmania for aircraft arriving from Sydney or Brisbane This new route will move up to 30% of aircraft arrivals to the east coast and over water. The inbound Standard Instrument Arrival (STAR), for all traffic from the east coast of Australia, tracks over water and crosses land only when necessary to join the new satellite based area navigation approaches (RNAV) at a location which aims to minimise noise impacts to rural communities (refer Figure 10). A change to air traffic control airspace volumes will be required to accommodate the new flight path and this will require approval from the Civil Aviation Safety Authority (CASA). Also shown in Figure 10 below is the new Standard Instrument Arrival (STAR) to join the Smart Tracking approach, which provides alternative tracking for arriving aircraft.

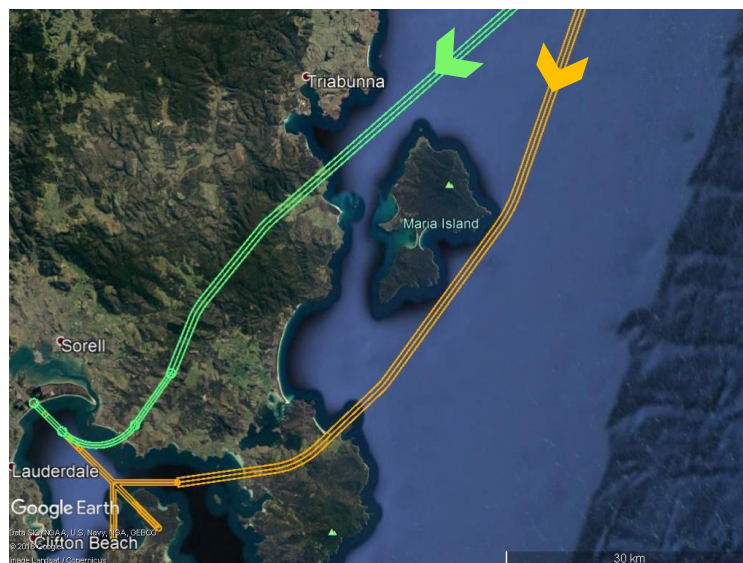


Figure 10: New Easterly Overwater Flight Path (Arrows indicate direction of flight path)

- Proposed arrival flight path corridor to Runway 30 satellite based area navigation approaches (RNAV)
- Proposed arrival flight path corridor to Runway 30 RNP AR (Smart Tracking)

Introduce new Standard Instrument Departures (SIDs) to Strahan and Antarctica

This will provide predictable departure flight paths for regular traffic and/or Antarctic departures (refer Figure 11).

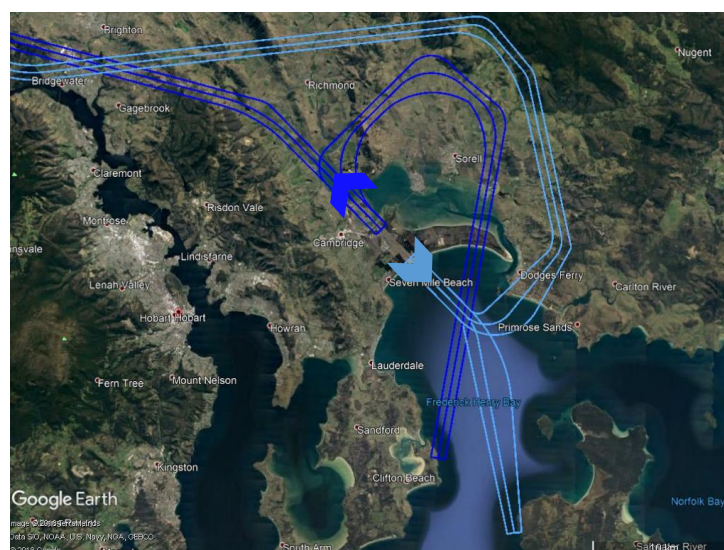


Figure 11: Standard Instrument Departures (SIDs) to Strahan and Antarctica (Arrows indicate direction of flight path)

- Proposed departure flight path corridors Runway 30
- Proposed departure flight path corridors Runway 12

Re-design the Runway 30 Satellite Based Area Navigation Approaches (RNAV) to extend it over water

The adjusted Standard Instrument Arrival (STAR) crosses land at a point that minimises residential noise effects as much as possible. (Refer Figure 12)



Figure 12: Runway 30 Satellite Based Area Navigation Approaches (RNAV) (Arrows indicate direction of flight path)

- Current (Actual) Arrival Tracks
- Proposed flight path arrival corridor

Standard Instrument Departure (SID)/Standard Instrument Arrival (STAR) design with a vertical crossover

Flight paths for arriving and departing traffic are moved with the crossover (white circle) now occurring at higher levels, further improving safety and allow arriving aircraft to descend without levelling out. (refer Figures 13 and 14)

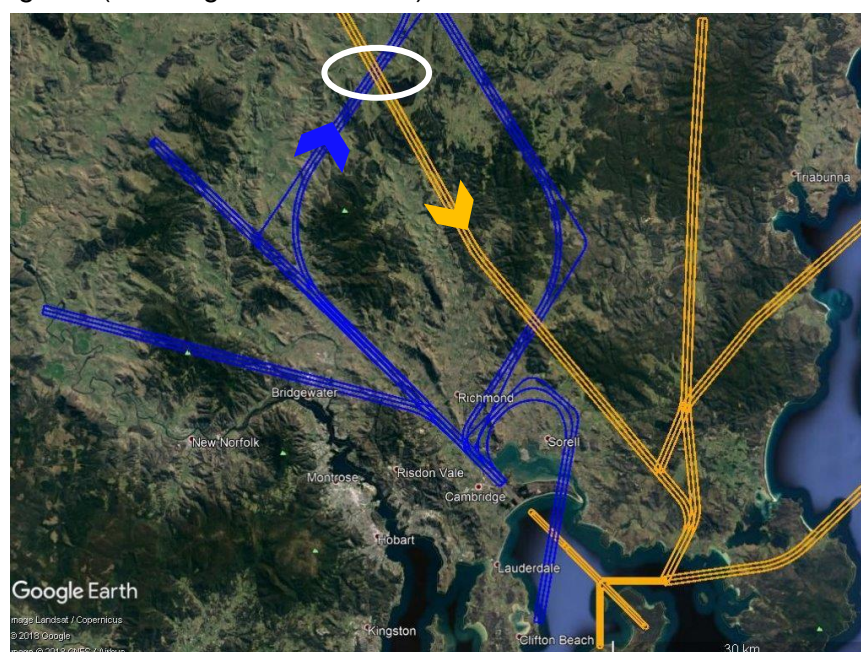


Figure 13: Proposed vertical crossover of Runway 30 arrivals (13000ft) and departures (14000ft). (Arrows indicate direction of flight path)

- Proposed departure flight path corridors
- Proposed arrival path corridors

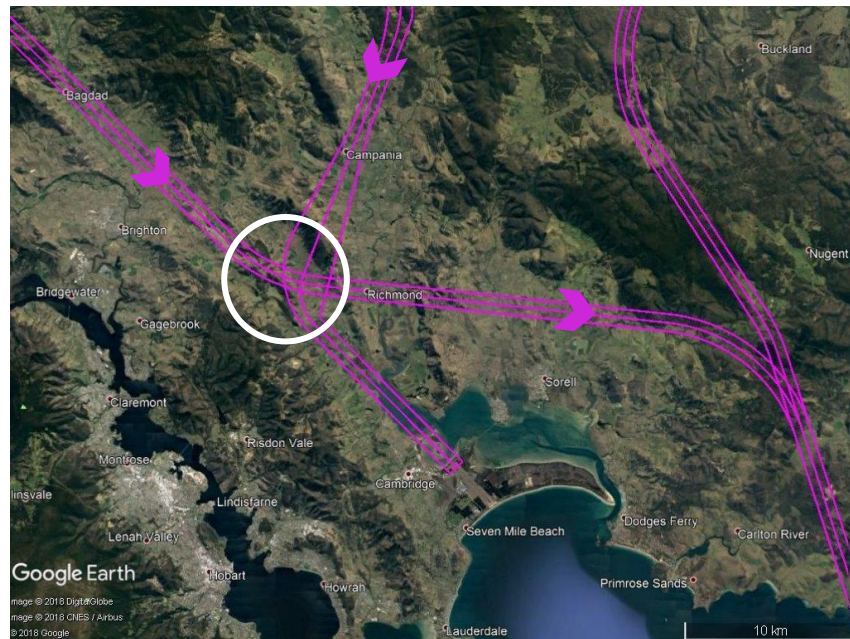


Figure 14: Existing vertical crossover of Runway 30 arrivals (9000ft) and departures (8000ft) (Arrows indicate direction of flight path)

— Existing flight path corridors (arrows indicate direction of flight paths)

Movement of flight paths away from sensitive sites

No sites of National Environmental significance are overflow. Consideration of the World Heritage listed Coal Mine Historic Site, Freycinet Peninsula and Maria Island have informed the design. (refer Figures 15 and 16)

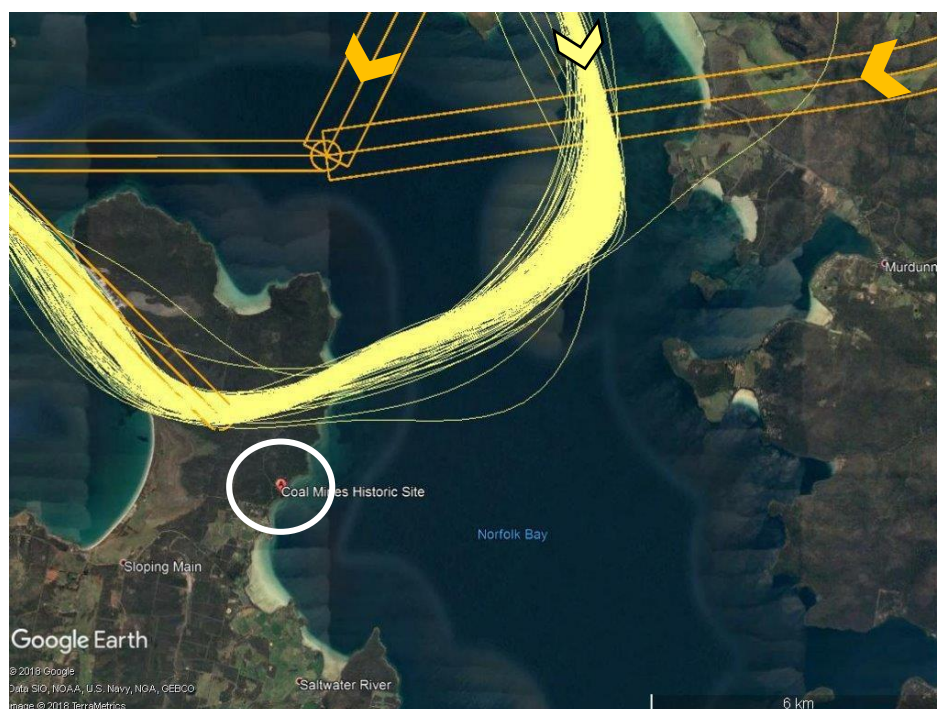


Figure 15: Movement of flight paths away from the World Heritage listed Coal Mine Historic Site (Arrows indicate direction of flight path)

— Current (Actual) Arrival Tracks
— Proposed flight path corridors



Figure 16: Consideration of Maria Island and the Freycinet Peninsula (Arrows indicate direction of flight path)

- Proposed arrival flight path corridors (above 10,000ft) to avoid Maria Island
- Proposed Smart Tracking arrival flight path corridors (above 10,000ft) to avoid Maria Island

Holding patterns with operations below 6000 feet have moved to be located over sparsely populated areas wherever possible (Refer Figure 17). This is to minimise noise impacts.

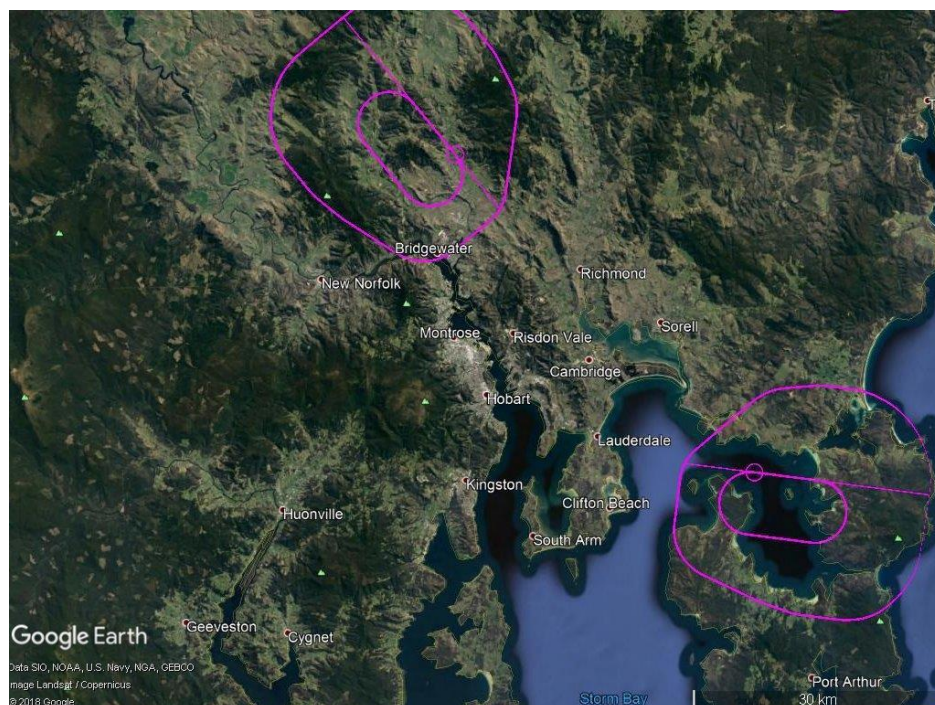


Figure 17: New Holding Patterns below 6000ft

- Proposed Aircraft holding corridors

HOW WERE THE DESIGNS DEVELOPED?

The proposed flight path designs meet international and domestic regulatory requirements, and certain design constraints including:

- aircraft capability
- controlled airspace design
- single runway airport capacity
- pilot work load
- air traffic control system capability and
- air traffic control standards and procedures.

The range of flight path designs must also be 'flyable', which refers to the ability for aircrews and the aircraft systems to operate within normal limits. Designs that are flyable must then be tested to ensure that they are feasible from an operational perspective.

The proposed designs have also been informed by numerous stakeholder considerations gathered from consultation and engagement activities conducted during the review.

The Hobart community considerations have been detailed in the [Social Impact Review Report](#) and from the Stakeholder Reference Panel meetings held in Hobart on 14 September 2018 and 30 October 2018.

A summary of the Flight Path Design Considerations is available on the [Airservices website](#).

Flight path designs were developed via an iterative process. Design alternatives were compared against a range of considerations relating to safety, efficiency, environment and stakeholders to determine the overall impact on the Hobart community. Environmental considerations included noise and visual impacts resulting from aircraft operations, ecological and heritage matters as well as fuel burn and emissions.

Flight path designs were modelled on a busy day of operations at Hobart Airport,

including night time operations, and were adjusted for winter and summer aircraft movement patterns and the seasonal variation to prevailing winds.

Aircraft movement data was adjusted for future movements in 12 months, noting that aircraft movements have exceeded the predicted levels for 2020 ([Hobart Airport Master Development Plan](#)). The flight paths have been designed with a 20 year outlook.

Actual aircraft movement data of the current operations (Figures 2 and 3) shows how air traffic control management of flights may be required due to emergency, safety or operational reasons, and therefore aircraft may appear to deviate off the assigned Standard Instrument Departures (SIDs) or Standard Instrument Arrivals (STARs).

WHEN WILL THIS CHANGE OCCUR?

The proposed flight path designs are open for stakeholder feedback from 31 October and have now been extended until 10 December 2018.

An implementation date will be determined once all the feedback is considered and the flight path designs are finalised.

WHERE CAN I GET MORE INFORMATION?

On-site community consultation will occur in Hobart between 15 to 21 November 2018. Dates and locations are available on the [Airservices website](#).

HOW CAN I HAVE MY SAY?

To provide feedback contact Tania Parkes Consulting:

- Email: taniaparkes@taniaparkes.com.au or
- Free call: 1800 172 173

Or the Noise Complaints and Information Service (NCIS) on:

- 1800 802 584 (free call), an interpreter service is also available on 131 450
- online at: <https://feedback.emsbk.com/asa>
- Mail to Noise complaints and Information Service, PO BOX 211 Mascot NSW 14

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