Supplementary Review: Aircraft containment Launceston

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Forward comment

The Supplementary Review for aircraft containment within controlled airspace at Launceston was conducted before the impact of COVID-19 on the aviation industry. The downturn in all aviation activity across Australia and internationally will have a significant impact on the analysis, outcomes and projections used in this report.

The impact of COVID-19 has not altered the conclusions or recommendations contained within this review.

1 Executive Summary

The *Airspace Act 2007* (Act)[1] provides the Civil Aviation Safety Authority (CASA) with authority to administer and regulate Australian-administered airspace and authorises CASA to undertake regular reviews of existing airspace arrangements.

The OAR published the Launceston Airspace Review in January 2019. An observation made in that review required further investigation in relation to aircraft containment within controlled airspace (CTA) whilst conducting continuous descent operations (CDO). The purpose of this review was to investigate the airspace architecture with regard to the containment of aircraft in controlled airspace on descent into Launceston.

The scope of this review included an assessment and analysis of risks that may impact efficiency for airspace users in controlled airspace within 35 nautical miles (NM) of Launceston aerodrome (Launceston), consultation with stakeholders to in relation to airspace design issues around Launceston and an assessment of air routes and procedures to ensure these are efficient and fit for purpose.

Information obtained from stakeholders during the Launceston Airspace Review 2019 and data received during this review was analysed. An assessment of other quantitative and qualitative data consisting of aerodrome traffic data, airspace design and Australian Transport Safety Bureau (ATSB) incident data was also undertaken.

1.1 Summary of Conclusions

The review found the existing airspace design at Launceston creates additional workload for pilots and air traffic control (ATC) with regard to containment of aircraft in CTA at Launceston.

Data provided to the Office of Airspace Regulation (OAR) confirmed stakeholder information with regard to aircraft profiles arriving from over Bass Strait onto runway 14 at Launceston. Also, aircraft arriving along the Flinders Island-Launceston route leave and re-enter CTA during descent. During both instances there is an increased workload for pilots and air traffic control (ATC) during the critical phase of flight. The types of aircraft include jet and turboprop aircraft that transport the largest number of passengers at Launceston.

There are no Standard Arrival Routes (STARs) published at Launceston. Existing Standard Instrument Departures (SIDs) are assigned depending on the direction the aircraft will travel i.e. North, South, West. Consideration for the introduction of STARs at Launceston is recommended however, this would also require a revision of the published SIDs.

Any changes to the Launceston airspace must consider Danger Area D305 which is a major component for aircraft noise management at Launceston.

Airservices Australia (Airservices) is continuing to design the introduction of Tasmania Approach and Class C terminal airspace at Hobart and Launceston. Clarification is required in relation to Launceston.

1.2 Key Recommendations

The following recommendations are made as a result of CASA's analysis of the Launceston airspace:

[1] A full list of acronyms and abbreviations used in this report can be found in Annex A.

Recommendation 1 Airservices should submit an airspace change proposal to amend the Launceston airspace architecture within 12 months from the publication of the final report. The changes are to ensure containment within controlled airspace and increase operational efficiencies for aircraft arriving from over Bass Strait and Flinders Island and for future increases in aircraft movements at Launceston.

Recommendation 2 That Airservices consider the introduction of STARs at Launceston that enable CDO for aircraft.

1.3 Key Observations

1. Airservices provides clarification on the introduction of an Approach and Class C terminal airspace service at Launceston with regard to expected timeframes for implementation.

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2 Introduction

The Office of Airspace Regulation (OAR) within the Civil Aviation Safety Authority (CASA) has carriage of the regulation to administer and regulate Australian-administered airspace, in accordance with section 11 of the *Airspace Act 2007* (Act). Section 12 of the Act requires CASA to foster both the efficient use of Australian-administered airspace and equitable access to that airspace for all users. CASA must also consider the capacity of Australian-administered airspace to accommodate changes to its use and national security. In exercising its powers and performing its functions, CASA must regard the safety of air navigation as the most important consideration.[2]

Section 3 of the Act states that 'the object of this Act is to ensure that Australian-administered airspace is administered and used safely, taking into account … efficient use of that airspace;'

The OAR published the Launceston Airspace Review in January 2019. An observation made in that review required further investigation in relation to aircraft containment within controlled airspace (CTA) whilst conducting continuous descent operations (CDO).

2.1 Purpose and Scope

The purpose of this supplementary review (the Review) is to examine aircraft containment within controlled airspace during descent operations into Launceston.

The Review analysed the controlled airspace within 35 nautical miles (NM) of Launceston aerodrome (Launceston) from the surface to Flight Level 180 (FL180). Figure 1 shows the area included in the review.

Aircraft operations above FL180, aerodrome facilities, developments and surrounding infrastructure issues are outside the scope unless a significant safety issue on the airspace operations is found. Airspace related matters that occur outside the airspace review area may be included, subject to the discretion of the OAR.

The review will include:

- Analysis of aircraft movement data;
- Analysis of the mix of aircraft operations in the area;
- Analysis of the current aircraft movement levels to determine the suitability of existing airspace;
- Analysis of the incidents and occurrences within the review area;
- Identification of threats or risks to the safety of operations within the airspace; and
- Consultation and consideration of feedback from airspace users.

Where determined, the Review will provide findings, observations and recommendations.

[2] Civil Aviation Act 1988, section 9A – Performance of Functions

3 Background

3.1 Launceston Airspace Review 2019

In January 2019, the OAR published the Launceston Airspace Review. That review included an observation to investigate aircraft containment within controlled airspace during CDO into Launceston.

The observation was founded on the information received from stakeholders. During that review process, users advised that the current airspace design increased cockpit workload while on descent into Launceston. The increased workload was necessary to ensure aircraft remained in CTA and complied with CASA Manual of Standards Part 172 – Air Traffic Services (MOS172). MOS172 provides that if the base of CTA is a visual flight rules (VFR) level, levels assigned to instrument flight rules (IFR) aircraft must provide a buffer of at least 500 ft with the base of CTA. For aircraft arriving at runway 14 at Launceston, at 30 distance measure equipment (DME), aircraft should not be lower than 9,000 feet (FT) above mean sea level (AMSL).

Reported traffic movements

The Launceston Airspace Review 2019 identified the following points in relation to passengers and aircraft movements:

- The number of aircraft with greater seating capacity operating at Launceston had increased during the review period.
- Passenger movements were slightly lower than the predicted 1.5 million passengers by 2020 contained in the Launceston Master Plan 2015[3]. However, it was likely to achieve more than 1.4 million based on the current passenger data trend;
- There had been on average, yearly increases in total aircraft movements, air transport movements and passenger movements.

Stakeholder feedback

Airspace users advised that the current airspace design can increase the workload experienced in the cockpit and for air traffic control (ATC) in relation to aircraft operating controlled airspace.

Examples provided included aircraft on descent from higher levels over Bass Strait experiencing strong tail winds that effect CDO profiles and airspeed requirements, particularly when approaching runway (RWY) 14 at Launceston. Pilots required to manually intervene in the operation of the descending aircraft, which increases the cockpit workload for pilots and decreases the benefits of CDO. Other examples included aircraft flying the Flinders Island/Launceston route leaving and re-entering CTA while descending into Launceston airport. Clearances are required to be obtained by the pilots from ATC to leave and re-enter CTA and this increases the workload for pilots and ATC.

The aircraft types impacted included jet and turboprop aircraft that transport the highest number of passengers at Launceston.

Review Recommendations Update

There were four recommendations made in the Launceston Airspace Review 2019. Three of the four recommendations are now closed and included the following actions:

- No change to the airspace classification at Launceston;
- When winch launching operations cease at Woodbury, advice to be provided to Airservices Australia (Airservices) to ensure an accurate depiction in aeronautical publications; and
- The continuation of aviation safety seminars in the Launceston area.

[3] Launceston Airport Master Plan 2015, Australian Pacific Airports (Launceston) Pty Ltd

The recommendation relating to the submission of a Request for Change for George Town and Cranbourn to operate on the same common traffic advisory frequency, remains open.

3.2 Airspace structure

Launceston airspace has the following airspace classes: Class C, Class D and Class E (controlled airspace) and Class G (non-controlled airspace) [4]. The airspace is centred on Launceston airport and designed in a keyhole outline to contain the primary air routes whilst enabling access to other airspace users. The airspace structure is primarily centred on the Launceston DME. A description of the airspace is in Annex C.

An observation is noted in the 2019 Launceston Airspace Review regarding the current airspace structure and the cockpit workload experienced during the critical phase of flight.

The last change to Launceston airspace was in 2019 that saw the introduction of a 25 DME step south of Launceston. This enabled additional Class G airspace for gliders etc. while providing no impediment to descending or climbing aircraft within controlled airspace.

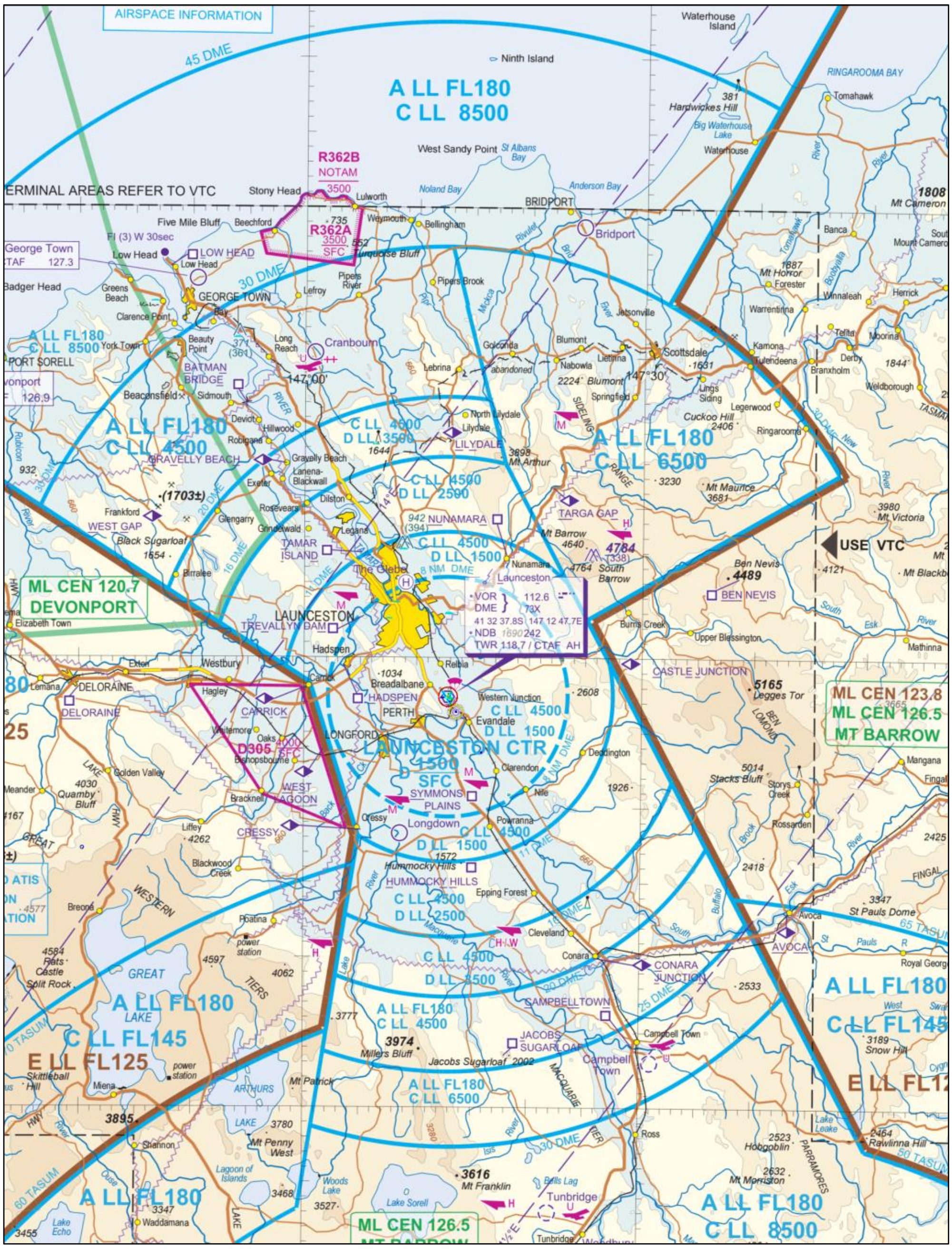

Figure 1: Launceston airspace architecture[5]

[4] Refer to Annex A – Australian Airspace Structure

[5] Visual Navigation Chart (VNC) – Launceston, Airservices Australia, effective 7 November 2019

Special Use Airspace

Danger Area D305 is contained in the western segment of the Class G airspace and found adjacent to the Launceston control zone (CTR). D305 is promulgated as a flying training area from the surface (SFC) to 4,000 FT AMSL. This area is fit for purpose and aids in aircraft noise management at Launceston.

Restricted Areas (RAs) R362A and R362B are controlled by the Army Directorate of Operations and Training Area Management (DOTAM) Victoria/Tasmania (VIC/TAS). The RAs are activated by a Notice to Air Men (NOTAM). The vertical limitation for R362A from the SFC to 3,500 FT AMSL and R362B from 3,500 FT AMSL to the NOTAM level. The RAs are located along the northern Tasmanian coastline between the townships of George Town and Bridport. There have been no airspace incidents or occurrences recorded at these RAs during the review period.

3.3 Surveillance

Surveillance in the review area is provided by the Tasmanian Wide Area Multilateration (TASWAM) System. TASWAM provides two distinct surveillance capabilities: A wide area multilateration (MLAT) (WAM) service provides a secondary surveillance 'radar-like' capability designed to support the Class C airspace, and an Automatic Dependent Surveillance – Broadcast (ADS-B) service. This supports surveillance across Tasmania.

In Tasmania, TASWAM comprises of 14 remote ground units. Four of these units are in the immediate vicinity of Launceston including three at the airfield and one in Launceston CBD. This enables ATC surveillance to the ground at Launceston with suitably equipped aircraft.[6] Aircraft departing from Launceston are identified by ATC in Melbourne Centre upon contact.

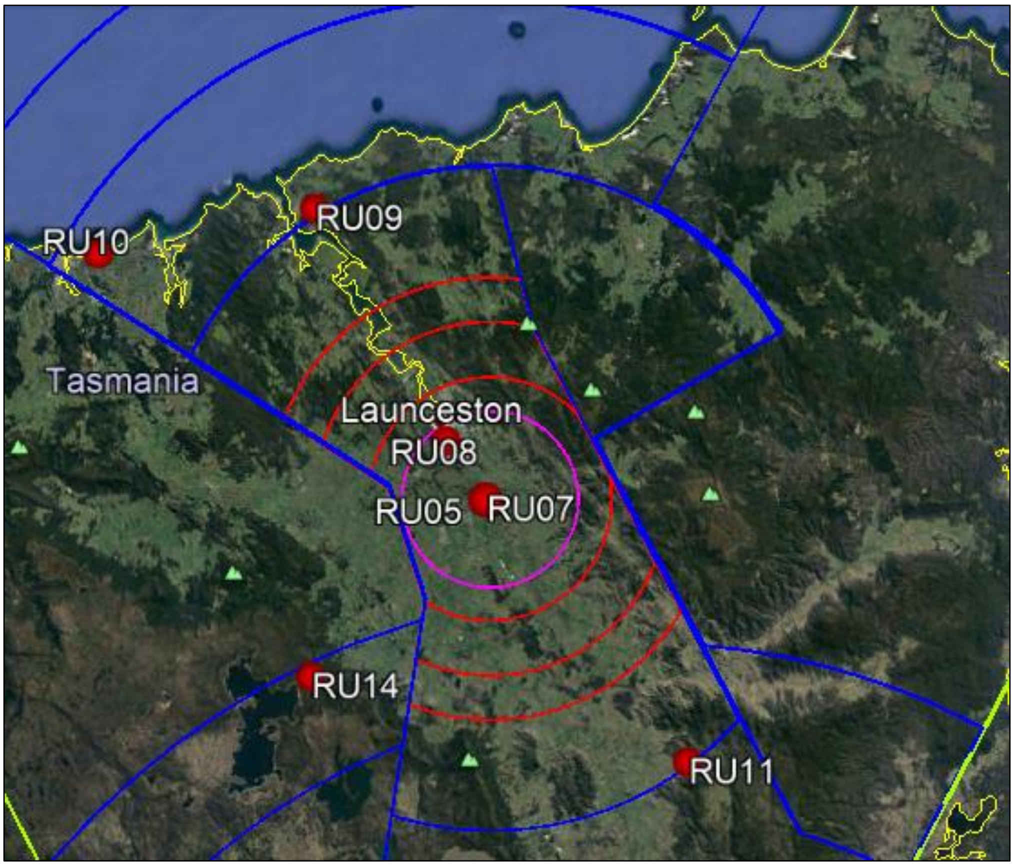

Figure 2: Launceston airspace and TASWAM locations[7]

[6] TASWAM is not used for separation purposes by ATC below 7,000 FT AMSL in Tasmania.

[7] Google Earth V 7.3.2.5776 (14 December 2015) Tasmania 41° 28' 20.55" S 147° 08' 35.39" E, Eye Alt 279.18km Landsat/Copernicus 2020. http://www.earth.google.com [20 January 2020]

3.4 Air Navigation Service Provider

Air Traffic Control services are provided by Airservices via their Melbourne Air Traffic Services Centre (Melbourne Centre) and the Launceston Control Tower. The control tower provides a procedural tower and a procedural approach control service within the Launceston Class C and Class D airspace, 8,500 FT AMSL and below. Outside tower hours, Melbourne Centre operate Launceston Class C and Class D airspace above 1,500 FT AMSL. Below 1,500 FT AMSL becomes Class G airspace and Common Traffic Advisory Frequency (CTAF) procedures apply.

As part of the airspace review of Hobart undertaken by the OAR in 2019, Airservices announced their intention to design the introduction of the Tasmania Approach and Class C terminal airspace update at Hobart and Launceston.[8] This would enhance the level of service provided to airspace users and the efficiency of the airspace.

3.5 Air Routes

The most common routes for Launceston are:

- Melbourne – approximately 120 flights each week;
- Sydney – approximately 24 flights each week; and
- Flinders Island – approximately 18 flights each week.

The air route structure in the review area segregates the majority of passenger transport operations (PTO) aircraft travelling to/from the main Tasmanian airports. Aircraft adhere to these air routes unless instructed by ATC (when operating in CTA) or there are other operational requirements such as weather diversions.

Terminal Instrument Flight Procedures

There are no Standard Arrival Routes (STARs) published for Launceston. Standard Instrument Departures (SIDs) published for Launceston are allocated to aircraft determined by the direction of travel i.e. North or South and provide guidance to waypoints on various air routes.

There are multiple Instrument approach and landing (IAL) procedures at Launceston that operate using various satellite-based and ground-based navigation technologies including an instrument landing system (ILS), very high frequency (VHF) omnidirectional range (VOR), area navigation (RNAV) and Global navigation satellite systems (GNSS).

The following terminal instrument flight procedures (TIFPs) are published for Launceston.[9]

Standard Instrument Departures
RWY 14R/32L NORTH ALPHA
RWY 14R NORTH BRAVO
RWY 14R/32L SOUTH

Instrument Approach and Landing Procedures (IALs)	
DME or GNSS ARRIVAL – SECTOR A	ILS-Y or LOC-Y RWY 32L
DME or GNSS ARRIVAL – SECTOR B	ILS-Z or LOC-Z RWY 32L
DME or GNSS ARRIVAL – SECTOR C	VOR RWY 32L
DME or GNSS ARRIVAL – SECTOR D	RNAV-Z (GNSS) RWY 14R
DME or GNSS ARRIVAL – MOTRA to LT	RNAV-Z (GNSS) RWY 32L
VOR RWY 14R	

Table 1: Tables of terminal instrument flight procedures Launceston

[8] Airservices Australia, Projects, Airspace Modernisation viewed 21 January 2020, http://www.airservicesaustralia.com/projects/airspace-modernisation/
[9] Source: Aeronautical Information Publication (AIP) Departure and Arrival Procedures (DAP) amendment 161 effective 07 November 2019, Airservices Australia, Canberra, 2019

4 Traffic and Incident Reports

4.1 Aircraft and passenger movements

Aircraft and passenger movement data recorded between July 2017 to July 2019 for Launceston revealed yearly increases for air transport and passenger movements of approximately 7.2% and 4.5% respectively. Air transport movements increased from 18,054 to 19,356 and passenger movements from 1,357,491 to 1,418,451.

Continued growth in aircraft and passenger movements is a reasonable expectation for the future. The Launceston Airport Preliminary Draft Master Plan 2020 forecasts moderate growth in annual passenger movements (approximately 1.9 million by 2028) and aircraft movements (approximately 23,000 by 2028).[10]

July	Passenger Movements	Air Transport Movements	Total Movements
2017	1,357,491	18,054	21,452
2018	1,400,177	18,715	22,505
2019	1,418,451	19,356	24,928

Table 2: Launceston passenger and aircraft movement data July 2017 to July 2019

An assessment on IFR aircraft at Launceston based on seating capacity showed that high seating capacity aircraft movements were consistent with approximately 12,000 movements during each 12-month period. Low seating capacity aircraft movements increased on average 4.1% from 2,799 to 3,035 and medium seating capacity aircraft increased from 3,211 to 3,910, which represents a yearly average increase of approximately 10.3% during the same time.[11]

July	IFR High Capacity	IFR Medium Capacity	IFR Low Capacity
2017	11,994	3,211	2,799
2018	11,998	3,598	2,971
2019	12,108	3,910	3,035

Table 3: IFR movements by aircraft seating capacity

The above data indicates that aircraft with a higher seating capacity are being used to facilitate the increase in passenger movements while aircraft movements remain consistent.

4.2 Australian Transport Safety Bureau and Airservices incident data

Based on risk, there is no requirement to change the current airspace classification. This does not prevent an airspace classification change from proceeding that will enhance efficiencies within the airspace.

Australian Transport Safety Bureau data

The Australian Transport Safety Bureau (ATSB) primary focus is the safety of the travelling public. The ATSB database records reported occurrences that are logged, assessed and classified. In relation to aviation, each record is known as an Aviation Safety Incident Report (ASIR). These are detailed as an incident, serious incident or accident and assigned one of the following Level 1 descriptions:

- Airspace – includes airspace infringements, loss of separation (LoS), loss of separation assurance, breakdown of coordination/information error, error by ANSP instruction or pilot actions, encounter with a remotely piloted aircraft system (RPAS);
- Consequential Events – includes aircraft conducting missed approaches, fuel dumping, diverting or returning to aerodrome;

[10] Launceston Airport Preliminary Draft Master Plan (2020-2040), Australia Pacific Airports (Launceston) Pty Ltd
[11] Aircraft seating capacity: Low – Less than 10; Medium – 10 to 39; High – greater than 40.

- Environment – most common description for a bird strike, evidence of bird strike after landing or locating animals during runway inspections but also includes lightning strikes and turbulence issues;
- Infrastructure – such as runway lighting, approach lighting and radio frequency failures;
- Operational – considers pilot actions and runway incursions (resulting in events including LoS), ground proximity warnings, terrain collisions, crew and cabin safety, smoke or fumes events, avionics and equipment issues; and
- Technical – includes airframe, systems such as landing gear indications and power plant matters e.g. engine running rough, engine failure.

Between 01 August 2017 and 31 July 2019 there were 116 occurrences reported within 40 NM of Launceston to the Australian Transport Safety Bureau (ATSB). Environment (46%), Operational (35%) Technical (16%) and Airspace (3%) provide the level 1 descriptions for the total number of Aviation Safety Incident Reports (ASIR) recorded by the ATSB.

The following table and diagram provide a breakdown of the types of ASIRs recorded.

Level 1 Occurrence Description	Number of Occurrences		
	Aug 17 – July 18	Aug 18 – July 19	Total
Airspace	2	1	**3**
Consequential Events	0	0	**0**
Environment	27	26	**53**
Infrastructure	0	0	**0**
Operational	24	17	**41**
Technical	14	5	**19**
Total occurrences	**67**	**49**	**116**

Table 4: ATSB ASIR occurrence information

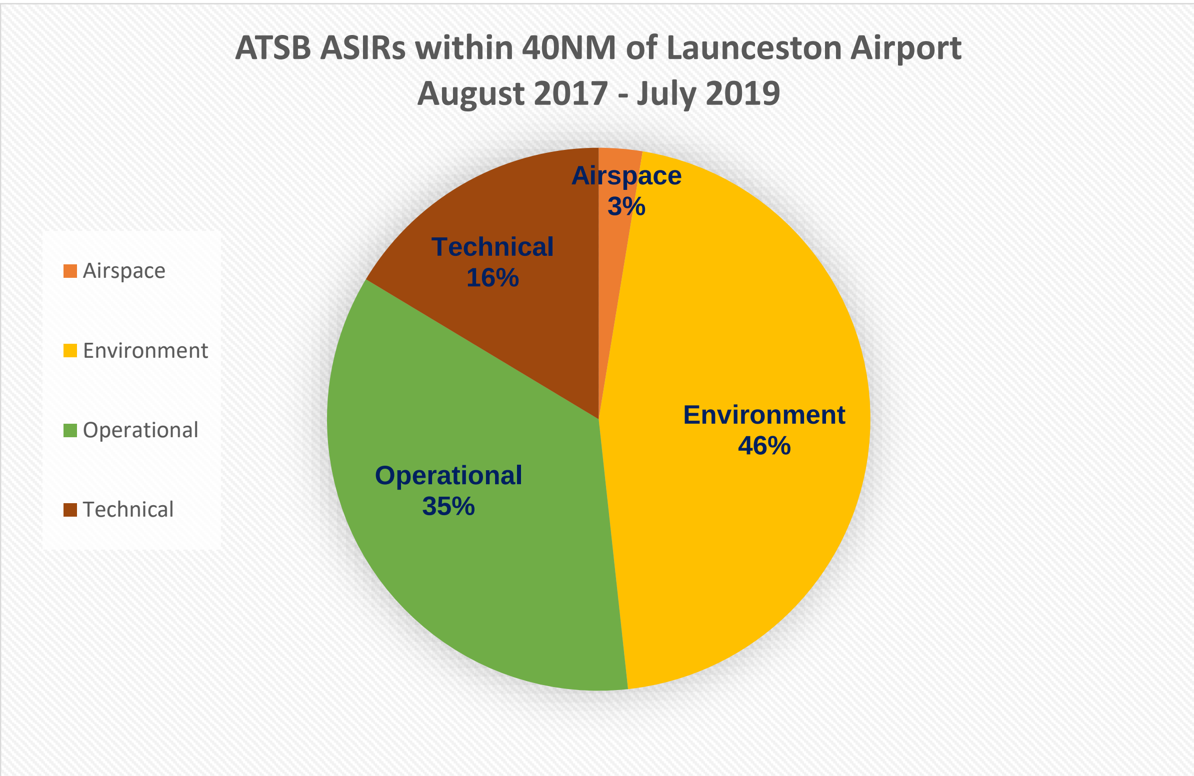

Figure 3: ATSB ASIR reports within 40NM of Launceston Aug 17 – Jul 19

An analysis of the data revealed that the airspace classification was not a causal factor in relation to recorded ATSB occurrences. A change in the airspace classification would not have prevented the following Airspace ASIRs from occurring:

- 22 November 2017 – A Cirrus SR22 aircraft climbed above the assigned level due to wind and entered CTA without a clearance resulting in a loss of separation assurance.
- 25 March 2018 – A Boeing 737 was cleared to climb without consideration of a Pilatus PC-12 transiting the area, resulting in a loss of separation assurance.
- 11 August 208 – During descent the crew of a Boeing 737 failed to advise ATC they were visual when the aircraft went below the radar lowest safe altitude.

The ratio of recorded occurrences to total air transport movements at Launceston during the review period is low.

Airservices data

Airservices' Corporate Integrated Reporting and Risk Information System (CIRRIS) recorded 53 incidents made between August 2017 and July 2019. Reported incidents of lasers directed towards aircraft (24%), airspace infringements (17%) and operational deviations (13%) were the most common types of incidents.

A CIRRIS report is an electronically submitted air safety occurrence report which forms part of the risk information system maintained by Airservices Australia. Not all information in CIRRIS is required to be reported to the ATSB and there may be differences between the two reporting systems.

There are differing options available to identify the primary occurrence type within CIRRIS compared to the number available within the ASIR system. As CIRRIS is primarily utilised by Airservices, there will be differences between the number of occurrences reported between the two systems.

The following table lists the CIRRIS reports by the occurrence type recorded during the review period.

Primary Occurrence Description	**Number of Occurrences**		
	Aug 17 – July 18	**Aug 18 – July 19**	***Total***
Aircraft Accident	0	1	***1***
Airspace Infringement	5	4	***9***
Emergency Operations	2	2	***4***
Facility Issue	1	4	***5***
Ground Proximity Warning	0	1	***1***
Information Error	3	3	***6***
Laser	9	4	***13***
Loss of Separation Assurance	1	0	***1***
Malfunction of Aircraft System	3	0	***3***
Operational Deviation	3	4	***7***
Other – Safety Related	0	3	***3***
Total occurrences	**27**	**26**	***53***

Table 5: Airservices CIRRIS occurrences

The following diagram displays the CIRRIS reports recorded during the review period.

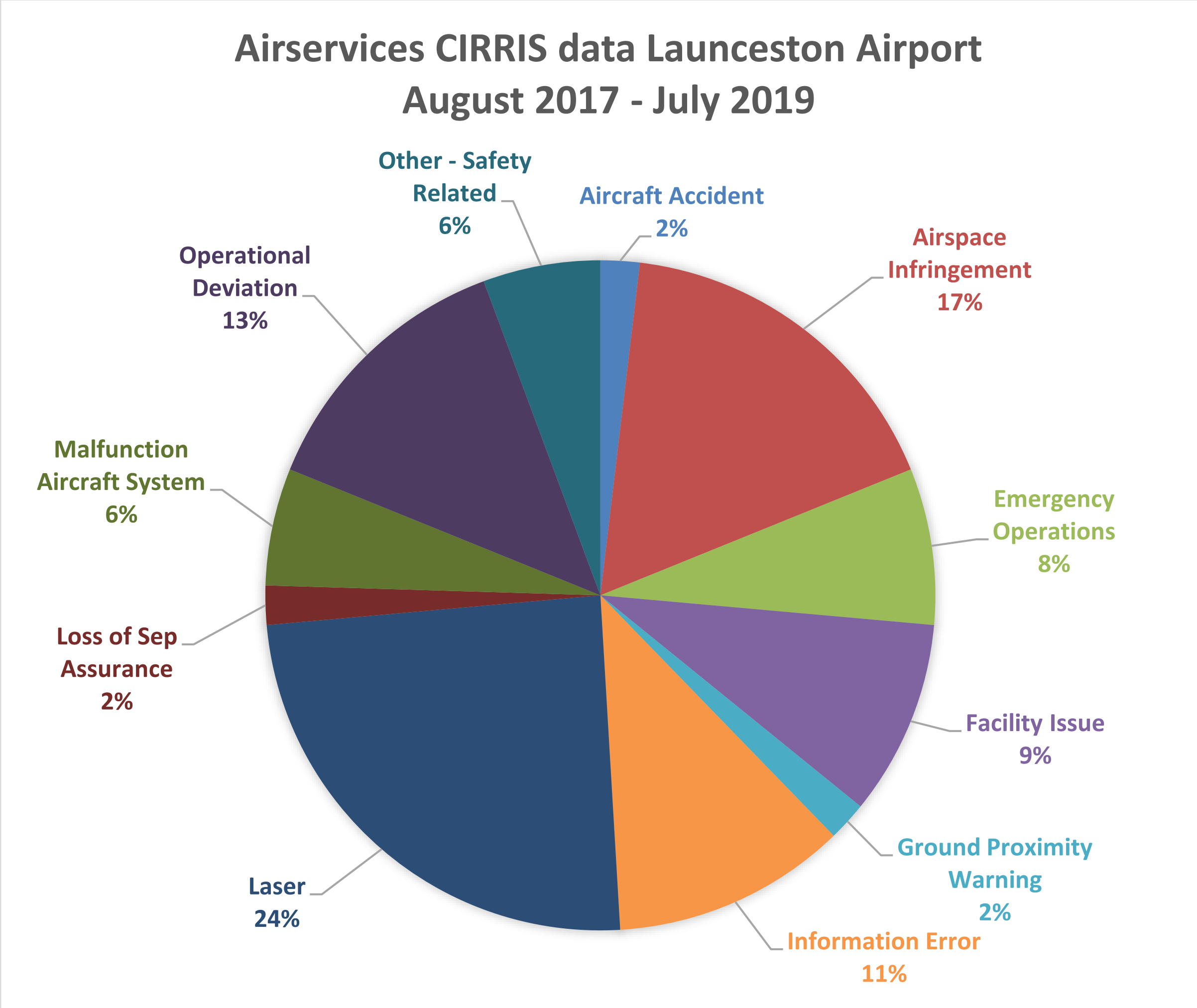

Figure 4:Airservices CIRRIS reports for Launceston Aug 17 – Jul 19

An analysis of the three highest types of occurrences showed:

- Laser occurrences reduced over the review period. No laser report resulted in crew incapacitation or required aircraft to alter operations.
- Airspace infringement reports were consistent during each 12-month period. A change in the controlled airspace classification would not have prevented the incidents from occurring. There was no impact on other aircraft operating in CTA however the majority of the incidents reported aircraft not responding to initial radio calls by ATC. Once communications had been established, aircraft received a clearance or left controlled airspace.
- Operational deviations:
    - Two occasions aircraft descending below the route lowest safe altitude. When queried these aircraft confirmed flying visually. There was no impact to other aircraft.
    - One report involved an aircraft not in continuous two-way communication with ATC. This occurrence resulted in an aircraft conducting a missed approach and aircraft were at all times visually separated.
    - On three occasions aircraft did not adhere to ATC instructions but did not impact any other airspace user.

A change in the airspace classification may have prevented one recorded operational deviation out of 53 recorded incidents.

5 Consultation and stakeholder feedback

Stakeholder feedback obtained during the previous Launceston Airspace Review remains relevant for this supplementary review. Comments received indicate that the current airspace architecture could be amended to increase the efficiency of aircraft operations at Launceston.

The following points relating to airspace architecture were recorded by stakeholders during the previous review:

- Larger capacity aircraft have replaced some services by the Qantas Group and Virgin Australia.
- The aerodrome is actively encouraging increased seating capacity in driving demand for passengers coming to Tasmania as an alternative to Hobart.
- Launceston aerodrome provides significant economic benefit to Tasmania and is identified as critical State infrastructure.
- Tailwinds vary significantly for aircraft flying over Bass Strait compared to those experienced closer to the ground and airfield. Pilots are required to manually intervene with the operation of the aircraft to remain in controlled airspace due to the current CTA steps. AIP ENR 1.1 provides that pilots remain not less than 500 FT above the lower limit of the CTA step. Therefore at 45 DME aircraft should be not less than FL130 and at 30 DME, not less than 9,000 FT AMSL. Also aircraft are limited to a speed of less than 250 knots below 10,000 FT AMSL. The tailwinds experienced over Bass Strait, airspace containment and airspeed requirements require pilots to manually intervene in the operation of the aircraft to ensure compliance. The aircraft types impacted by these factors included jet and twin turbine aircraft. These aircraft transport the majority of passengers at Launceston.
- Changes to the current airspace design could increase the benefits of CDO, increase airspace and aircraft efficiencies and ensure the aircraft would remain in CTA with less pilot interaction.
- Arrivals into Launceston along the Flinders Island route has aircraft leaving CTA at about 15 DME and re-entering CTA within the ‘keyhole’ of Launceston airspace. This increases cockpit workload and communication with or coordination between ATC. The steps should be extended to ensure aircraft remain within CTA to improve efficiency.
- Surveillance is undertaken using TASWAM at Launceston. ATC in the Launceston tower request level updates from aircraft to enable aircraft further climb or descent, however, this does increase ATC and cockpit workload during critical phases of flight.
- There is turbulence to the west of the airport and that can quickly impact operations in the air. Aircraft can delay descent due to turbulence being felt 15-25 NM west of the airfield.
- The design of SIDs and STARs should be more efficient for aircraft and not just convenient for ATC. User involvement in the design should include consideration of track miles being flown and turbulence issues. Provisions for CAVOK days where a visual approach can be issued should be considered.
- D305 is important for the ongoing training development of pilots. The area is also a fundamental mitigator with regard to the management of aircraft noise within the aerodrome circuit.

6 Summary of Issues and Recommendations

The following issues and recommendations have been identified.

6.1 Design of airspace architecture

Issues

The current design of the airspace at Launceston does not provide the most efficient use of the area and requires increased cockpit workload for aircraft arriving into Launceston.

Aircraft descending from flight levels over Bass Strait into Launceston onto runway 14 experience tailwinds that effect the efficient operations of aircraft.

Aircraft operating with CTA arriving from the north-east of Launceston are required to leave and re-enter CTA due to the lower limit of that sector.

This issue regarding the design of the airspace architecture will continue increase in significance as air transport movements increase at Launceston.

Findings

The majority of the current airspace design remains suitable for operational purposes however, the current design imposes limitations in relation to optimal aircraft performance and the management of increasing air traffic.

Data which showed the descent altitudes of various aircraft arriving from over Bass Strait. was reviewed by the OAR. The data identified that enhancement to airspace operations could be gained, particularly between 30 DME to 35 DME area, north of Launceston. The current step from 30 DME to 45 DME has a Class C LL 8,500 FT AMSL. The data substantiates information received from stakeholders regarding the cockpit workload during descent. These actions are not conducive to CDO.

Aircraft arriving from the north-east along the Flinders Island-Launceston route, transit the CTA that has a Class C LL 6,500FT AMSL. Aircraft are required to leave and re-enter CTA approaching Launceston. This activity requires additional communication between the pilot and ATC.

The ‘keyhole’ airspace design narrows towards the aerodrome before expanding out. The design limits the CTA available for aircraft operating at lower altitudes closer to airfield and the reasonable option is to expand the western section due to terrain limitations east of Launceston noting that:

- D305 is a critical element for noise mitigation at Launceston; and
- Turbulence can be experienced by aircraft 15-25DME west of Launceston.

The increasing air transport movements at Launceston are likely to limit additional aircraft operating within the keyhole area of the airspace.

There are no STARs published for Launceston which could enhance air traffic management within the review area. As a consequence, the introduction of STARs will require a review of currently published SIDs.

A review of the airspace architecture within these areas should be undertaken to enhance the effectiveness and efficiency of users within that airspace.

Recommendations

Recommendation 1 Airservices should submit an airspace change proposal to amend the Launceston airspace architecture within 12 months from the publication of the final report. The changes are to ensure containment within controlled airspace and increase operational efficiencies for aircraft arriving from over Bass Strait and Flinders Island and for future increases in aircraft movements at Launceston.

Recommendation 2 That Airservices Australia consider the introduction of STARs at Launceston that enable CDO for aircraft.

6.2 Airspace classification

Issue

Airservices has announced their intention to continue to design the introduction of the Tasmania Approach and Class C terminal airspace at Hobart and Launceston. This is an upgrade to a higher level of service than is currently provided at Launceston.

Findings

Based on risk, the existing airspace classification at Launceston remains suitable. Air transport and passenger movements has increased however there has been no significant change in the complexity of air traffic at Launceston. The types of aircraft operating in the area remain similar.

The existing structure is a Class D CTR overlaid by Class C airspace and there has been no change to the level of surveillance within the review area.

The introduction of an Approach and Class C terminal airspace service at Launceston will enhance the level of service provided and may increase the efficiency of controlled airspace operations.

Airservices is proposing to introduce similar services at Hobart.

Observation

Airservices to provide clarification on the introduction of an Approach and Class C terminal airspace service at Launceston with regard to expected timeframes for implementation.

7 Conclusion

The OAR has conducted a review of Launceston and determined that the airspace architecture influences the effectiveness and efficiency of aircraft operations. To enhance and improve operations in the review area recommendations have been made to amend the airspace and introduce STARs at Launceston.

The airspace classification complies with the requirements of the *Airspace Act (2007)*, Airspace Regulations (2007), the Australian Airspace Policy Statement (2018), the Minister's Statement of Expectation (2019) and CASA's Regulatory Philosophy. An observation was made seeking clarification from Airservices on enhancing and improving the level of service operating in the review area.

Annex A Acronyms and Abbreviations

Acronym/abbreviation	Explanation
AAPS	Australian Airspace Policy Statement 2018
ACP	Airspace Change Proposal
Act	Airspace Act 2007
ADS-B	Automatic Dependent Surveillance - Broadcast
Airservices	Airservices Australia
ALA	Aircraft landing area
ALARP	As Low As Reasonably Practicable
AMSL	Above Mean Sea Level
ANSP	Air Navigation Service Provider
ASA	Aviation Safety Advisor
ASIR	Aviation Safety Incident Report
ATC	Air Traffic Control
ATS	Air Traffic Services
ATSB	Australian Transport Safety Bureau
CASA	Civil Aviation Safety Authority
CCO	Continuous Climb Operations
CDO	Continuous Descent Operations
CTA	Control Area
CTAF	Common Traffic Advisory Frequency
CTR	Control Zone
DA	Danger Area
Defence	Department of Defence
DME	Distance Measuring Equipment
ERC	En Route Chart
ERSA	En Route Supplement Australia
FT	Feet
FL	Flight Level
GA	General Aviation
IAL	Instrument Approach and Landing
ICAO	International Civil Aviation Organization
IFP	Instrument Flight Procedure
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
km	Kilometre
kt	Knot
LL	Lower Level
MLAT	Multilateration
NOTAM	Notice to air men
NM	Nautical Miles
OAR	Office of Airspace Regulation
PT	Passenger transport
PTO	Passenger Transport Operations
RA	Restricted Area
RAPAC	Regional Airspace and Procedures Advisory Committee
RFC	Request for Change
RNAV	Area Navigation
RPAS	Remotely Piloted Aircraft Systems
SFC	Surface
SID	Standard Instrument Departure

Acronym/abbreviation	Explanation
STAR	Standard Arrival Route
TAC	Terminal Area Chart
TASWAM	Tasmanian Wide Area Multilateration
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VNC	Visual Navigation Chart
VTC	Visual Terminal Chart
WAM	Wide Area Multilateration

Annex B Australian Airspace Structure

Class	Description	Summary of Services/Procedures/Rules
A	All airspace above FL180 (east coast) or FL245 elsewhere	IFR only. All aircraft require a clearance from ATC and are separated by ATC. Continuous two-way radio and transponder required. No speed limitation.
B	IFR and VFR flights are permitted. All flights are provided with ATS and are separated from each other. Not currently used in Australia.	
C	In CTRs of defined dimensions and control area steps generally associated with controlled aerodromes	• All aircraft require a clearance from ATC to enter airspace. All aircraft require continuous two-way radio and transponder. • IFR separated from IFR, VFR and Special VFR (SVFR) by ATC with no speed limitation for IFR operations. • VFR receives traffic information on other VFR aircraft but are not separated from each other by ATC. SVFR are separated from SVFR when visibility is less than Visual Meteorological Conditions (VMC). • VFR and SVFR speed limited to 250 knots (kt) Indicated Air Speed (IAS) below 10,000 FT AMSL*.
D	CTRs of defined dimensions and control area steps where an ATS is provided due to high traffic density & varying aircraft capabilities but less complex than Class C aerodromes.	• All aircraft require a clearance from ATC to enter airspace. For VFR flights this may be in an abbreviated form. • As in Class C airspace all aircraft are separated on take-off and landing. All aircraft require continuous two-way radio and are speed limited to 200 kt IAS at or below 2,500 FT AMSL within 4 NM of the primary Class D aerodrome and 250 kt IAS in the remaining Class D airspace**. • IFR are separated from IFR, SVFR, and provided with traffic information on all VFR. • VFR receives traffic on all other aircraft but is not separated by ATC. • SVFR are separated from SVFR when visibility is less than VMC.
E	Controlled airspace not covered in classifications above	• All aircraft require continuous two-way radio and transponder. All aircraft are speed limited to 250 kt IAS below 10,000 FT AMSL*, • IFR require a clearance from ATC to enter airspace and are separated from IFR by ATC and provided with traffic information as far as practicable on VFR. • VFR do not require a clearance from ATC to enter airspace and are provided with a Flight Information Service (FIS). On request and ATC workload permitting, a Surveillance Information Service (SIS) is available • within surveillance coverage.
F	IFR and VFR flights are permitted. All IFR flights receive an air traffic advisory service and all flights receive a flight information service if requested. Not currently used in Australia.	
G	Non-controlled	• Clearance from ATC to enter airspace not required. All aircraft are speed limited to 250 kt IAS below 10,000 FT AMSL*. • IFR require continuous two-way radio and receive a FIS, including traffic information on other IFR. • VFR receive a FIS. On request and ATC workload permitting, a SIS is available within surveillance coverage. VHF radio required above 5,000 FT AMSL and at aerodromes where carriage and use of radio is required.

* Not applicable to military aircraft
** If traffic conditions permit, ATC may approve a pilot's request to exceed the 200 kt speed limit to a maximum limit of 250 kt unless the pilot informs ATC a higher minimum speed is required.

Annex C Launceston Airspace Description

The airspace within 35NM of Launceston as shown on Figure 1.

- The Launceston Control Zone (CTR) is promulgated to eight (8) Distance Measuring Equipment (DME), centred on the Launceston DME (LT DME). The vertical limit is from the SFC to 1,500 FT AMSL.
- Class D airspace steps to the north-west (NW) and south-east (SE), aligned with the 14R/32L runway centreline at intervals of 11, 16 and 20 DME with lower limits (LL) of 1,500 FT AMSL, 2,500 FT AMSL and 3,500 FT AMSL respectively.
- Class C overlays Class D with a LL of 4,500 FT AMSL to 30 DME to the NW and 25 DME to the SE.
- An added step to the SE was introduced effective 24 May 2018. The step from 25 LT DME to 30 LT DME has a LL of 6,500 FT AMSL.
- Class C airspace with a LL of 8,500 FT AMSL is from 30 DME to 45 DME.
- Class C airspace with a LL of 6,500 FT AMSL is located to the north-east (NE) of Launceston and commences approximately 11 DME to 30 DME.
- Class G airspace exists below the CTA steps and from the SFC to FL125 to the west (W) and east (E) of a truncated 11 DME CTA step.
- Class E airspace exists above the Class G airspace to the W and E of the CTA steps with a LL of FL125.
- South west (SW) between 50 TASUM[12] and 60 TASUM Class C with a LL FL125 and between 60 TASUM and 70 TASUM Class C with a LL FL145.
- SE between 50 TASUM and 65 TASUM Class C airspace with a LL FL145.
- Class A airspace with a LL of FL180 overlays Classes C, D and E airspace.
- Between 30 DME and 35 DME to the north and flanked by George Town and Bridport are Restricted Areas (RA) R362A and R362B. Respectively each area is from the SFC to 3,500 FT AMSL and from 3,500 FT AMSL to the NOTAM level. R362A/B are controlled by Army Directorate of Operations and Training Area Management (DOTAM) for Victoria and Tasmania. NOTAM activates the RAs.
- Danger area D305 is promulgated as a training area. The vertical limitation is from the SFC to 4,500 FT AMSL. D305 is contained in the western segment of the Class G airspace. The contact authority is CASA Safety Assurance Branch, Southern Region and the hours of activity are during daylight hours.

Outside Launceston Tower hours, the Launceston Class D is reclassified Class G.

[12] TASUM is a waypoint referenced to Hobart Airport. Therefore 50, 60, 65 etc. TASUM equals the nautical miles from TASUM.

Annex D Stakeholders

The following stakeholders were contacted to contribute to this review.

Organisation
Airservices Australia
CASA
Launceston Airport
Qantas Group
Sharps Aviation
Virgin Australia

Annex E References

Airservices Australia; Australia En-Route Chart Low L2 Effective 7 November 2019 Airservices Australia;

Airservices Australia; Australia Terminal Area Chart Hobart Launceston Effective 7 November 2019 Airservices Australia;

Airservices Australia Visual Navigation Chart Hobart Effective 7 November 2019 Airservices Australia;

Airservices Australia Visual Terminal Chart Launceston Effective 7 November 2019 Airservices Australia;

Airservices Australia. Departure and Approach Procedures (DAP) East Amendment 161 Effective 7 November 2019 Airservices Australia

Airservices Australia. En Route Supplement Australia (ERSA) Effective 7 November 2019 Airservices Australia

Airservices Australia, Airspace Modernisation (2019, November 21) retrieved 21 January 2020 from http://www.airservicesaustralia.com/projects/airspace-modernisation/

Airservices Australia; Airspace Risk Assessment Class E over Class D Towers 2004 Canberra

Airspace Act 2007 Australian Government, Canberra

Airspace Regulations 2007, Australian Government, Canberra

Australian Pacific Airports (Launceston) Pty Ltd; Launceston Airport Master Plan 2015

Australian Transport Safety Bureau, Aviation safety investigations and report 2017-2019 retrieved 6 December 2019 from http://www.atsb.gov.au/publications/safety-investigation-reports/?mode=Aviation

Aviation Safety Incident Reports 2017-2019 Australian Transport Safety Bureau, Canberra

Civil Aviation Safety Authority, Office of Airspace Regulation (2019). Airspace Review of Launceston Aerodrome January 2019;

Corporate Integrated Reporting and Risk Information System 2017-2019, Airservices Australia, Canberra

Department of Infrastructure and Regional Development 2018. Australian Airspace Policy Statement 2018, Canberra https://www.legislation.gov.au/Details/F2018L01386

Google Earth V 7.3.2.5776. 2019. Tasmania http://www.earth.google.com

Annex F Stakeholder Consultation / Feedback Register

The following sections are the consolidation summary of comments or responses received, the OAR's response and disposition to actions to the Supplementary Review: Aircraft containment Launceston 2020.

Stakeholder and Reference:

Virgin Australia: Recommendation 1

Comment.

A suggestion was forwarded to ensure that the objectives of Recommendation 1 are separated into elements for clarification. Suggested that the wording of the recommendation included airspace containment within Class C airspace.

CASA Response and disposition.

The OAR appreciated the feedback provided and acknowledged that forwarded suggestion does add clarity to Recommendation 1.

Recommendation 1 was amended to include the words 'airspace containment' and 'controlled airspace' however, the recommendation is clear in the objectives and there is no requirement to separate each element.

Any airspace change proposal will require stakeholder consultation and feedback. The compliance with the elements of Recommendation 1 are expected during that process.

Stakeholder and Reference:

Sharp Airlines: Report – general overview

Comment.

Agree with all the recommendations.

CASA Response and disposition.

Noted.

Stakeholder and Reference:

Qantas Group of airlines: Report – general overview

Comment.

No changes to the recommendations however clarification requested regarding the introduction of an Approach and Class C terminal airspace service at Launceston.

Specific comments provided regarding how the architecture could be redesigned to fulfil the elements of recommendations.

CASA Response and disposition.

The OAR appreciates the feedback provided. The specific feedback provided relating to the design of the airspace has been recorded for reference. These comments are likely to be addressed during the airspace change process.

The Review made an observation seeking clarification from Airservices Australia on the introduction of an Approach and Class C terminal airspace service to Launceston. There was no change to that text.