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Civil Aviation Safety Authority
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Preliminary Airspace Review
Alice Springs

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0.1	Initial draft	September 2018
0.2	Contains peer feedback	January 2019
1.0	Final Incorporates stakeholder feedback	February 2019

1 EXECUTIVE SUMMARY

The *Airspace Act 2007* (Act) [1]provides the Civil Aviation Safety Authority (CASA) with the authority to administer and regulate Australian-administered airspace and obligates CASA to conduct regular reviews of the existing classifications of Australian–administered airspace. The Office of Airspace Regulation (OAR) conducted a Preliminary Airspace Review (the Review) of the airspace arrangements and classifications within 50 nautical miles (nm) of Alice Springs Airport (Alice Springs) to determine if the airspace remains fit for purpose.

This review applies the CASA regulatory philosophy which considers the primacy of air safety but also takes account all relevant considerations including cost.

An assessment of feedback from stakeholders concluded there could be better management of traffic handling by Alice Springs Tower.

The eight-year period has shown a decrease in passenger numbers with the average being 696,748 per year.

The eight-year period has shown an increase in aircraft movement numbers with the average being 24,265 aircraft per year.

The OAR has determined that the current airspace architecture is fit for purpose.

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

CONTENTS

2 BACKGROUND

2.1 Overview of Australian airspace classifications

Australian airspace classifications accord with Annex 11 of the International Civil Aviation Organization (ICAO) and include Class A, C, D, E, and G depending on the level of service required to safely and effectively manage aviation activity. Class B and Class F airspace are not currently used in Australia. Each class of airspace determines the type and nature of aviation operations permitted in that airspace. Annex B provides details of the classes of airspace used in Australia.

Alice Springs provides combined Tower and Approach control services within Class C and D airspace 8,500 feet (ft) above mean sea level (AMSL) and below during tower hours. Melbourne Centre provides Air Traffic Services (ATS) within Class C airspace above 8,500 ft AMSL during tower hours. Outside tower hours Alice Springs Class C and D airspace below Flight Level (FL) 180 becomes Class G and Class C airspace between FL180 and FL245 becomes Class E.

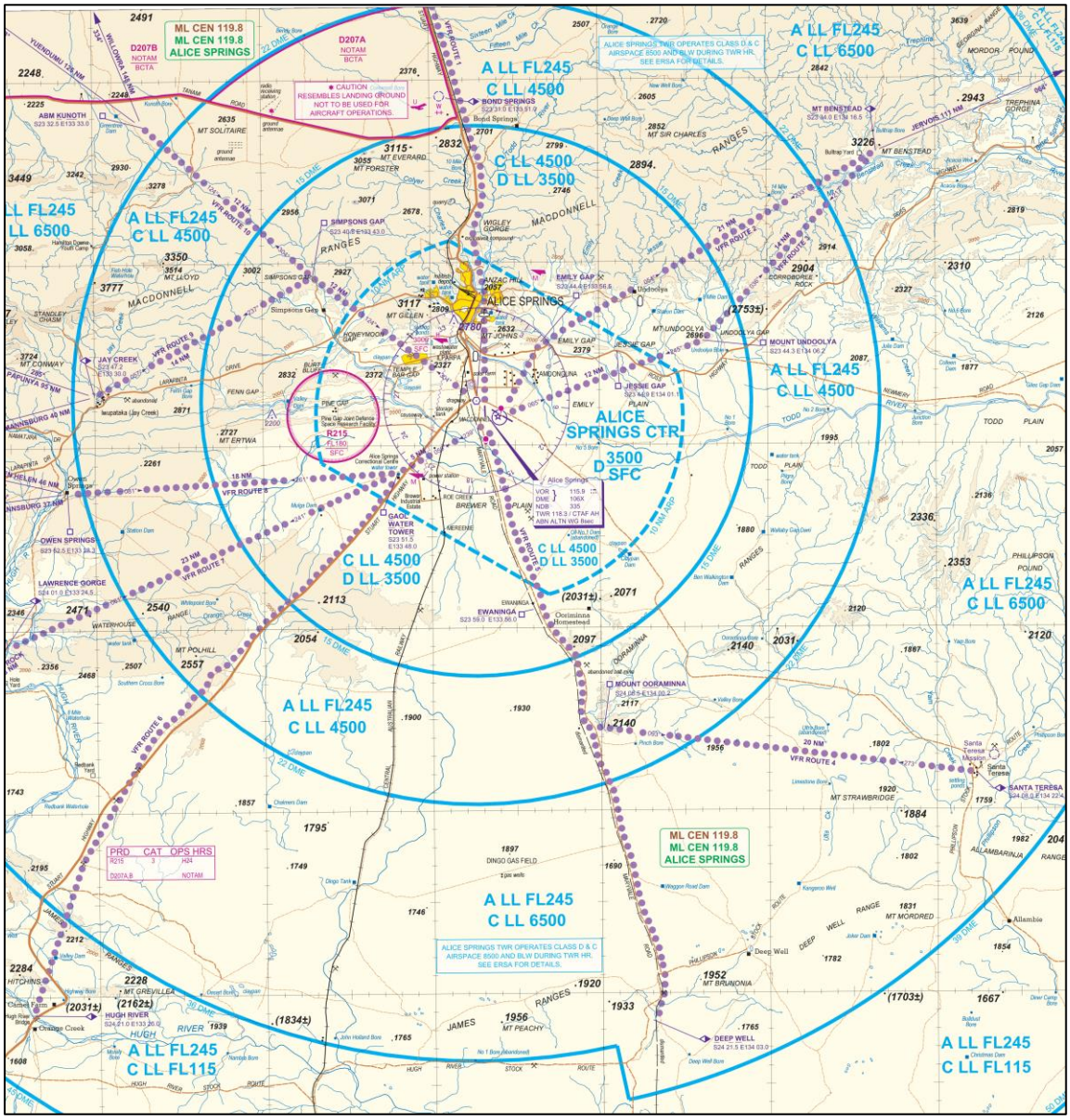

Figure 1: Extract of Alice Springs Visual Terminal Chart (VTC) Effective 24 May 2018.

2.2 Aerodrome

Alice Springs aerodrome is a certified aerodrome and is located thirteen kilometres South of the town of Alice Springs. The aerodrome facilitates aeromedical transport through the Royal Flying Doctor Service (RFDS) and regional passenger transport services between Adelaide, Ayers Rock, Brisbane, Cairns, Darwin, Kalgoorlie, Melbourne, Tennant Creek and Perth, serviced by Air North, Alliance Airlines, Chartair, Cobham/QantasLink, Qantas Airways and Virgin Australia Airlines.

2.3 Air Navigation Service Providers at Alice Springs

The airspace surrounding Alice Springs provides combined Tower and Approach control services within Class C and D airspace 8,500 ft AMSL and below during tower hours. Melbourne Air Traffic Services Centre provides ATS within Class C airspace above 8,500 ft AMSL during tower hours. Outside tower hours Alice Springs Class C and D airspace below FL180 becomes Class G and Class C airspace between FL180 and FL245 becomes Class E.

Coming into effect in May 2019, Alice Springs Tower will provide air traffic control services from the surface to 4,500 ft AMSL. Services from 4,500 ft AMSL to 8,500 ft AMSL will be provided by an en route controller, rather than the tower. The proposed change will only affect the controlling unit's area of responsibility. There will be no change to the lower level, upper level or class of airspace.

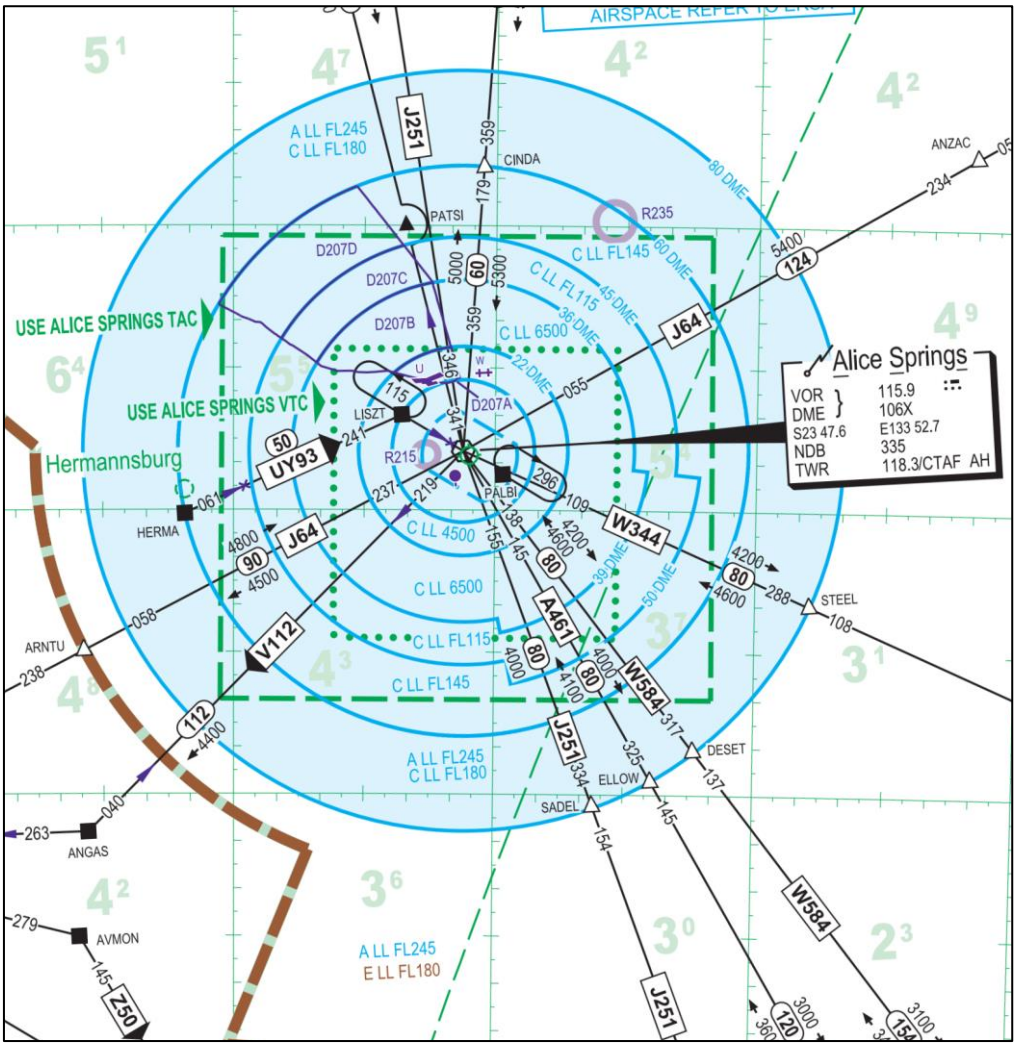

Figure 2: Extract of En Route Chart H3 Effective 9 November 2017

2.4 Surveillance

There is no radar coverage within the vicinity of Alice Springs. Situated at the airport is an Automatic Dependent Surveillance-Broadcast (ADS-B) ground station. ADS-B is a system in which suitably equipped aircraft automatically broadcast their location via a digital data link. The data is received by ground stations and can be displayed on air traffic controller's screens. All Instrument Flight Rules (IFR) aircraft in Australia are required to be fitted with ADS-B avionics. ADS-B coverage at 5,000 ft AMSL is outlined in Figure 3.

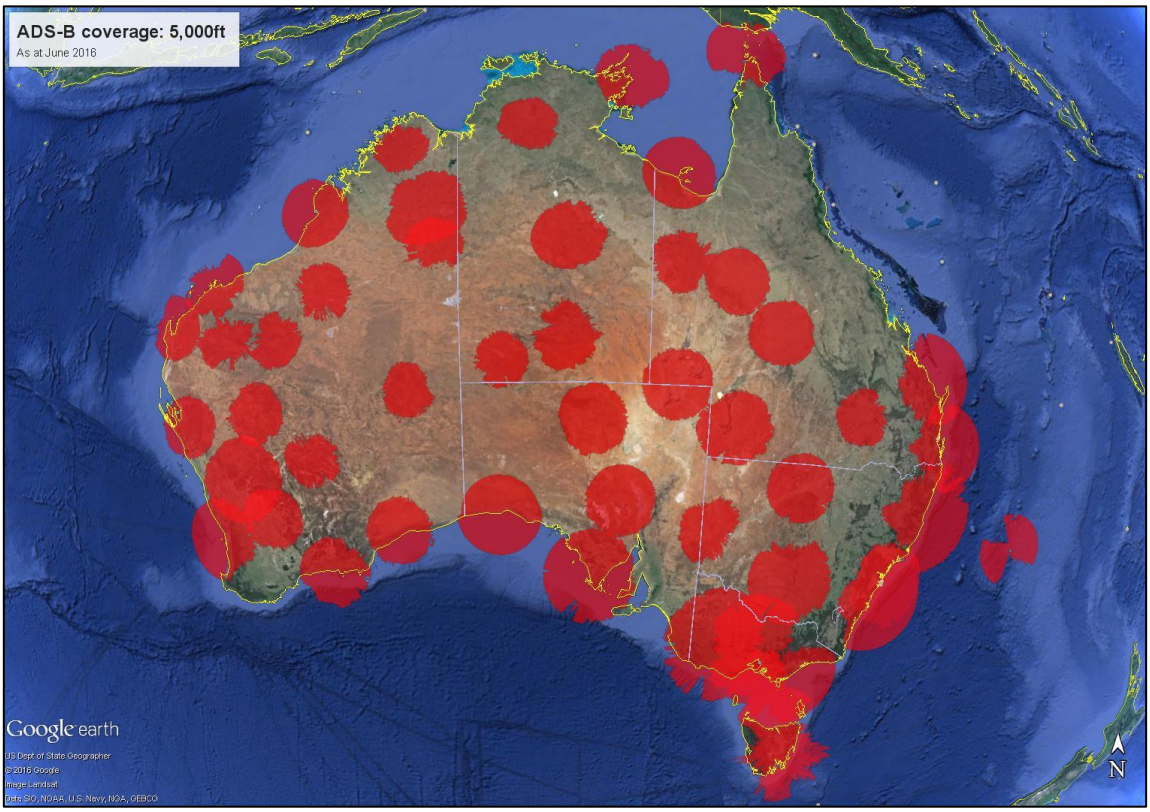

Figure 3: ADS-B coverage at 5,000 ft AMSL (Airservices Australia).

2.5 Alice Springs passenger and aircraft movements

The total aircraft movements as at 31 August 2018 for the preceding 12 months was 24,672. This represents an increase of 9.66% from 22,498 total aircraft movements for the 12 months to the end of January 2010[2].

The total passenger movements as at 31 August 2018 for the preceding 12 months was 684,744. This represents a decrease of 8.8% from 751,4850 passengers for the 12 months to the end of January 2010.[3]

The Alice Springs Airport Master Plan spans 2015 - 2035. The aviation activity forecast projects that passenger movements will increase to approximately 750,000 passengers by the end of the planning period. Combined airline and general aviation (GA) movements are forecast to increase from 19,000 movements to 22,700 movements per year by the end of the planning period.[4]

2 Total aircraft movements source: Airservices Australia.
3Total passenger movements source: Airservices Australia
4 Alice Springs Airport Master Plan Final 2015. https://www.alicespringsairport.com.au/planning

3 AVIATION INCIDENTS

3.1 Aviation safety incident reports

Any accident or incident involving Australian registered aircraft or foreign registered aircraft in Australian airspace must be reported to the Australian Transport Safety Bureau (ATSB). Every aviation safety incident report (ASIR) is entered into the ATSB database and is available to the OAR. Defence incidents are also included within these reports. Information from the ATSB confidential reporting system (REPCON) is also available.

3.2 Summary of incidents

This review has assessed the ASIR data for an area within 50 nm of Alice Springs and has determined that there are no incidents that justify changes to the airspace architecture. CASA through the Stakeholder Engagement Division and the OAR has initiated strategies to mitigate risk through safety promotion intended to reduce the causal factors for aircraft safety occurrences. CASA will continue to monitor incident reports for the Alice Springs area to determine and undertake further regulatory action or review as required.

ASIR Occurrence records indicate there were 440 occurrences, within 50 nm of Alice Springs, reported between 1 January 2010 and 6 September 2018. Of these 34 occurrences were categorised as airspace related. A breakdown of the airspace related occurrences is categorised as follows:

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Airspace Infringement	1	1	1	1						4
Loss of Separation		1		1	1	2				5
Aircraft Separation - OCTA		1	1				3			5
Operational Non Compliance		1	2	1	1	1	1		1	8
Breakdown of Coordination										0
Airborne Collision Avoidance System		1						2		3
Information Procedural Error ATC	2	1	1	2	1			1	1	9
Totals	3	6	5	5	3	3	4	3	2	34

Table 1: ASIR Summary of recorded occurrences 2010 – 2018.

The OAR will continue to monitor aircraft movements to assess airspace risks and the safety of air navigation. Over the duration that the review covers, the airspace is considered fit for purpose and no justification for change is necessary.

4 FEEDBACK FROM STAKEHOLDERS

Stakeholder consultation was conducted through direct stakeholder communication as well as through the Stakeholder Engagement Division's safety forums.

One airline indicated that amended approach instructions are issued to them late in the arrival phase by Alice Springs Tower. This occurs typically around 10 nm from the airport and creates a significant increase in work load for the crew. A typical arrival would see the crew arrive in the airspace pre-briefed on the expected arrival. The crew's concerns arose due to the arrival procedure being cancelled and amended at a late stage in the approach. The cause of these amendments are often slower aircraft in the traffic pattern.

Airline request for greater utilisation of the current Standard Instrument Departures (SIDs) and to introduce Standard Terminal Arrival Routes (STARs) at Alice Springs to increase efficiency.

Jet aircraft are required to track via an outbound radial when departing to the North West. This is due to the location of Restricted Area R215 (Pine Gap). The operator requests Alice Springs Tower to issue clearances to the North West that would utilise the runway 12/30 NORTH SID via waypoint HONGI. Utilisation of this SID would allow for greater crew situational awareness and for the crew to fly the departure with greater accuracy.

A jet Regular Public Transport (RPT) aircraft operator advises that the airspace steps don't allow for a continuous descent profile for sector arrivals from the South East, approaching transition altitude.

Various operators advise that the required number of position reports under procedural separation standards creates radio congestion.

5 KEY ISSUES AND FINDINGS

- Issue: The late amendments issued to jet aircraft by Alice Springs Tower regarding the arrival procedure when in close proximity to the runway due to additonal smaller GA traffic. Pilot workload is significantly increased at a phase of flight where it is not ideal for promotion of safe operation close to the runway.
    - Finding: Jet aircraft are arriving at the control zone of Alice Springs pre-briefed on the expected arrival procedure. Alice Springs Tower is issuing alternate arrival instruction while aircraft are in close proximity to the airport.
- Issue: Airline request to improve operational efficiency for arrivals into Alice Springs.
    - Finding: The introduction of STARs at Alice Springs would create a more efficient flight path for arriving aircraft. This would be achieved by allowing smoother transition from the approach phase of flight to the applicable instrument approaches. A direct benefit of introducing STARs would create safer and efficient decent profiles.
    - Improvement Opportunity: Introduction of STARs and additional or revised SIDs by Airservices or another instrument procedure design organisation.
- Issue: IFR departure clearances issued for aircraft departing to the North West of Alice Springs are required to track via a radial and not a published departure procedure.
    - Finding: IFR clearances issued to aircraft tracking via the North West of Alice Springs are required to track via a radial. This is inefficient and is due to Restricted Area 215 at Pine Gap. It creates additional workload for pilots and ATC.

- Improvement Opportunity: Assign the appropriate SID or create a SID that would allow for a more efficient and effective way to track to waypoint HONGI. Airservices to include R215 on instrument approach and departure charts.

- Issue: The airspace steps around the FL120 levels do not allow a constant descent to stay in contact with Alice Springs ATC if conducting a straight in approach for runway 30. For example, approaching Alice Springs from Brisbane, (approximately the 100 radial from Alice Springs VHF Omni Directional Range (VOR). If planning for a straight in approach (Runway 30 Area Navigation (RNAV) approach or via a visual 5 nm final) additional descent planning will be required, as the aircraft calculated descent profile will infringe the steps around 36 nm from Alice Springs.
  - Finding: Current Distance Measuring Equipment (DME) steps in the South East sector, airway route T11, indicate the lower level for Class C airspace at 39 DME from Alice Springs is 6,500 ft AMSL.
  - Improvement Opportunity: Coming into effect in May 2019, Alice Springs Tower will provide air traffic control services from the surface to 4,500 ft AMSL. Services from 4,500 ft AMSL to 8,500 ft AMSL will be provided by an en route controller, rather than the tower. The proposed change will only affect the controlling unit's area of responsibility. There will be no change to the lower level, upper level or class of airspace.[5] This change is a key element of a five-year Airspace Modernisation Project designed to drive key service outcomes that benefit the aviation industry and contribute to our commitment of fostering and promoting civil aviation.

- Issue: Pilots report that one of the least efficient aspects of operating into Alice Springs is due to the application of procedural separation standards. Airlines use Alice Springs as a hub with up to three or four waves of RPT jets each day with each wave consisting of five or six aircraft. In addition further traffic is smaller GA aircraft arriving to meet these higher capacity RPT flights.
  - Finding: Currently procedural separation standards are the only available means of air traffic control in the area due to the level of electronic surveillance.

[5] http://www.airservicesaustralia.com/wp-content/uploads/Fact-Sheet-Transfer-of-control-at-Alice-Springs.pdf

ANNEX A – ACRONYMS AND ABBREVIATIONS

AAPS	Australian Airspace Policy Statement
Act	*Airspace Act 2007*
ADS-B	Automatic Dependent Surveillance - Broadcast
AFRU	Aerodrome Frequency Response Unit
Airservices	Airservices Australia
AMSL	above mean sea level
ANSP	Air navigation service provider
ASIR	Aviation Safety Incident Report
ATC	Air Traffic Control
ATS	Air Traffic Services
ATSB	Australian Transport Safety Bureau
CAAP	Civil Aviation Advisory Publication
CASA	Civil Aviation Safety Authority
CTA	Control Area
CTAF	Common Traffic Advisory Frequency
ERSA	En Route Supplement Australia
ft	feet
FL	Flight Level
GA	general aviation
H24	24 Hours per day
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
kt	knots
nm	nautical miles
OAR	Office of Airspace Regulation
PT	passenger transport
QRIR	Quarterly Risk Indicator Review
RA	Restricted Area
RAPAC	Regional Airspace and Procedures Advisory Committee
RPT	Regular Public Transport
SED	Stakeholder Engagement Division
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VNC	Visual Navigation Chart
VTC	Visual Terminal Chart

ANNEX B – AUSTRALIAN AIRSPACE STRUCTURE

Class	Description	Summary of Services/Procedures/Rules
A	All airspace above Flight Level (FL) 180 (east coast) or FL 245	Instrument Flight Rules (IFR) only. All aircraft require a clearance from Air Traffic Control (ATC) and are separated by ATC. Continuous two-way radio and transponder required. No speed limitation.
B	Not currently used in Australia.	
C	In control zones (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 another VFR but is not separated from each other by ATC. SVFR are separated from SVFR when visibility (VIS) is less than visual meteorological conditions (VMC). VFR and SVFR speed limited to 250 knots (kt) indicated air speed (IAS) below 10,000 feet (ft) Above Mean Sea Level (AMSL)*.
D	Towered locations such as Bankstown, Parafield, Archerfield, Parafield and Alice Springs.	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 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 are provided with traffic information on all VFR. VFR receives traffic on all other aircraft but are not separated by ATC. SVFR are separated from SVFR when VIS 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 does 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	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 – REFERENCES

- Aeronautical Information Publication – 8 November 2018
- *Airspace Act 2007*
- Airspace Regulations 2007
- Australian Airspace Policy Statement – 2018
- En route Supplement Australia – 8 November 2018