Australian Government
Civil Aviation Safety Authority
www.casa.gov.au

Preliminary Airspace Review
Bathurst, NSW

February 2018

DOCUMENT SPONSOR: OFFICE OF AIRSPACE REGULATION

TRIM REFERENCE: D17/446882

FILE REF: FO17/1077

Document control:

Version	Issue/Nature of Revision	Date
0.1	Initial draft	November 2017
0.2	Contains peer feedback	November 2017
0.3	Contains additional feedback	February 2018
1.0	Final	February 2018

1 EXECUTIVE SUMMARY

1.1 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 architecture within 20 nautical miles (NM) of Bathurst Airport (Bathurst) to determine if the airspace remains "fit for purpose", compliant with the Airspace Act and safe for air navigation.

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

1.3 An assessment of airspace incidents and feedback from stakeholders concluded there were no risks that required changes to the existing airspace architecture around Bathurst. However, the review noted that further education and training programs by CASA may be beneficial to local airspace users as would the establishment of a local operator forum.

1.4 CASA conducted a review of the airspace in the vicinity of Bathurst in June 2009[2] but the OAR has been monitoring aircraft incident and movement data since 2009 to assess the need for another review. A rising trend in aircraft incidents involving passenger transport (PT), gliders and general aviation operations triggered the need for the OAR to conduct a preliminary airspace review. The outcomes of the preliminary review are used to determine the need for a more formal and detailed review.

1.5 The OAR review has determined that the current airspace architecture is fit for purpose and safe for air navigation by all users. However, the OAR has identified opportunities based on stakeholder feedback that may improve efficiency and mitigate potential risks generated by the mix of gliding activity with other airspace users.

[1] A full list of acronyms and abbreviations used within this report can be found at Annex A.
[2] The report is available on the CASA website https://www.casa.gov.au/file/149911/download?token=UWi8jy-v

CONTENTS

2 INTRODUCTION

2.1 Under Section 11 and 12 of the Airspace Act 2007 (Act), the Civil Aviation Safety Authority (CASA) has responsibility for the administration and regulation of Australian-administered airspace. In carrying out these responsibilities CASA must give primacy to aviation safety and must:

- foster efficient use of Australian-administered airspace,
- foster equitable access to that airspace for all users of that airspace,
- take into account national security, and
- take into account protection of the environment.

2.2 CASA conducted a review of the airspace in the vicinity of Bathurst in June 2009[3]. Regular reviews and analysis of aircraft incident and movement data have been conducted by the Office of Airspace Regulation (OAR) since 2009. Recent analysis identified an increasing trend in the number of aircraft incidents involving passenger transport (PT)[4], gliders and general aviation operations, which triggered the need for the OAR to conduct this preliminary airspace review.

2.3 Purpose

2.3.1 The purpose of the Preliminary Airspace Review of Bathurst was to analyse airspace activity, consult with airspace users/stakeholders and assess incident data to determine if there were any risks to the safety of air navigation around Bathurst that would require changes to the existing airspace architecture.

2.4 Process

2.4.1 The review process included:

- analysis of aircraft movement data;
- analysis of aircraft incident data provided by the Australian Transport Safety Bureau (ATSB) and Airservices Australia (Airservices);
- analysis of the nature of aircraft operations in the area;
- assessment of any issues related to airspace efficiency or airspace access;
- assessment of the appropriateness of the Air Traffic Services (ATS) and procedures within the review area;
- identification of any threats or risks to the safety of air navigation;
- assessment of the suitability of the existing airspace architecture;
- feedback from stakeholders and airport management; and
- feedback from specialist staff within CASA.

2.5 Scope

2.5.1 The scope of this review is limited to airspace within 20 nautical miles (NM) of Bathurst and below 8,500 feet (ft) above mean sea level (AMSL). The review did not assess operational matters or infrastructure issues.

3 BACKGROUND

3.1 Overview of Australian airspace classifications

3.1.1 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 is 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.

[3] The report is available on the CASA website https://www.casa.gov.au/file/149911/download?token=UWi8jy-v

[4] For the purposes of this study, PT services can be defined as activities involving regular public transport and all non-freight-only charter operations.

3.1.2 Bathurst is located within Class G airspace and is designated as an uncontrolled aerodrome where Common Traffic Advisory Frequency (CTAF) procedures apply. Class E airspace starts at 8,500 ft AMSL above the Bathurst aerodrome (see Figure 1).

3.1.3 There is a published Danger Area (D 538A) adjacent to the review area that is used for military flying training. The Danger Area (DA) extends from the surface to 7,500 ft AMSL and is activated via a Notice to Airmen (NOTAM). The DA has not been considered in this desk top review.

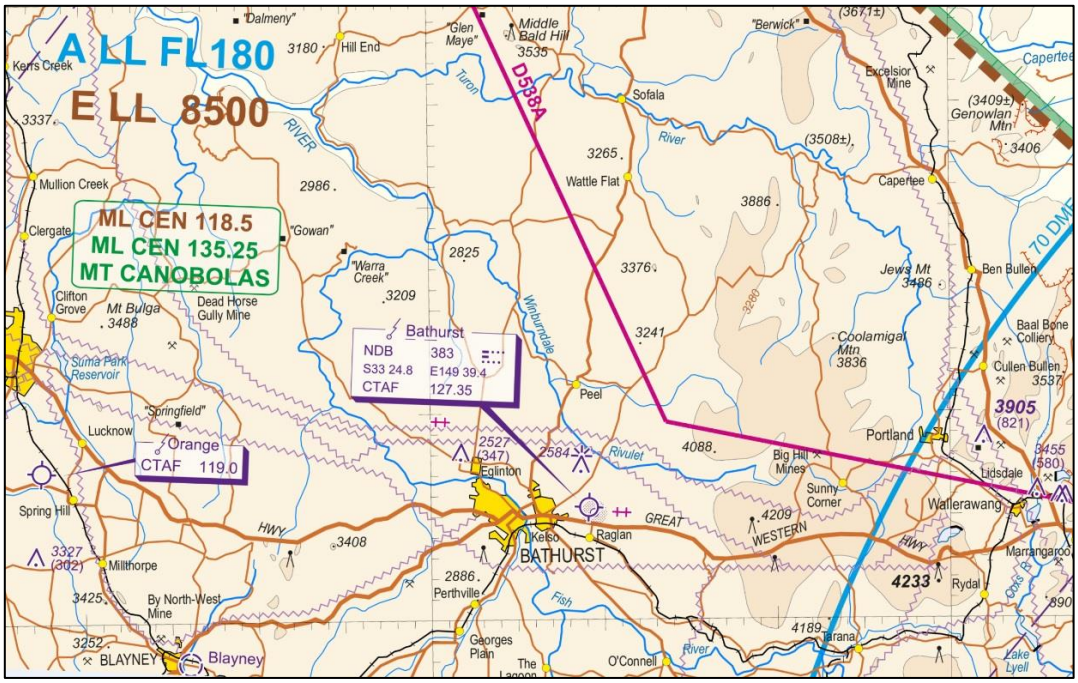

Figure 1: Extract of Newcastle Visual Navigation Chart (VNC) (Effective date 25 May 2017).

3.2 Aerodrome

3.2.1 Bathurst is a certified aerodrome located approximately four NM to the east of the city of Bathurst (see Figure 2). The aerodrome supports regional passenger transport operations currently Regional Express (REX), charter aircraft, general aviation, and recreational flying. Flying training is provided by WardAir and Central West Flying Training. The Bathurst Aero Club also operates from the airport. Gliding camps are conducted by the Australian Air Force Cadets, (AAFC) mainly during school holidays. The aerodrome is in close proximity to Pipers Field, which is a busy gliding field.

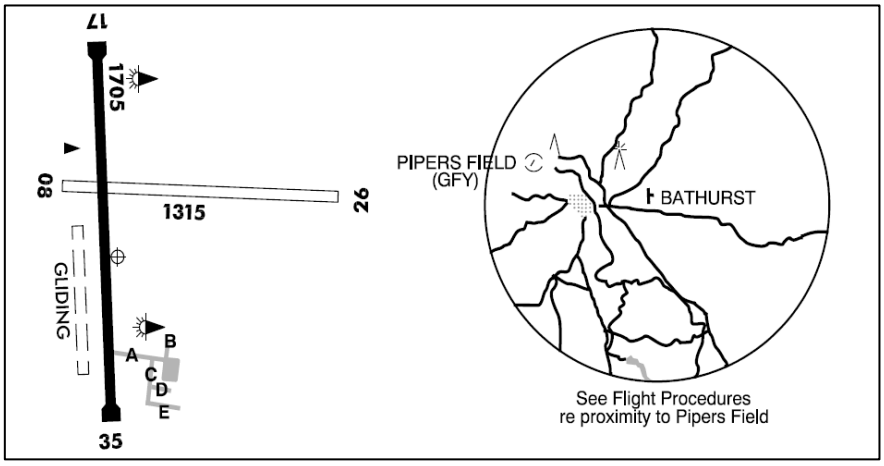

Figure 2: Extract of En Route Supplement Australia (ERSA) (Airservices: Effective date 25 May 2017).

3.3 Air Navigation Service Providers in the vicinity of Bathurst

3.3.1 Bathurst is used by aircraft operating under the visual flight rules (VFR) and under the instrument flight rules (IFR) and is an uncontrolled aerodrome subject to CTAF procedures in accordance with Civil Aviation Regulation (CAR) 166. ATS in the controlled airspace above Bathurst are provided by Airservices from Melbourne. All aircraft operating in Class G airspace around Bathurst are required to operate on the CTAF 127.35 frequency to enhance situational awareness and reduce the risk of a mid-air collision. An Aerodrome Frequency Response Unit (AFRU) provides confirmation to pilots that they are on the correct radio frequency.

3.4 Surveillance

3.4.1 Airservices has surveillance coverage down to 5,000 ft AMSL in the vicinity of Bathurst and Automatic Dependent Surveillance-Broadcast (ADS-B) coverage to the west of Bathurst above Flight Level (FL) 150. There is no ADS-B coverage around the Bathurst aerodrome.

3.5 Bathurst aircraft movements

3.5.1 The total number of aircraft movements at Bathurst has decreased from 33,599 for the 12 months period to June 2016 to 28,289 for the 12 months period to June 2017 (16% decline) and reflects a downward trend in GA activity. REX Aviation is currently the only PT operator at Bathurst and conducts 4,525 flights per year.

3.5.2 GA operations, including circuit training and glider flying represent the most significant proportion of aircraft movements at Bathurst with 24,000 or approximately 84% of all movements between June 2016 and June 2017.

3.6 Air navigation procedures

3.6.1 Airservices manages IFR aircraft above Bathurst inside the overlaying Class E airspace. Airservices provides separation between IFR aircraft in Class E airspace and provides traffic information to IFR aircraft about known VFR aircraft when possible. (VFR aircraft in Class E do not require a clearance from air traffic control).

4 AVIATION INCIDENTS

4.1 Summary of incidents

4.1.1 This review has assessed aviation incident data within 20 NM of Bathurst.

4.1.2 There were 176 occurrences (accidents, serious incidents or incidents) in the review area between 1 January 2006 and July 2017 (see Table 1). Thirty six of the reported incidents were airspace related and 15 of these involved PT operations. The number of incidents has generally averaged around two per year but there was spike in 2015 with six incidents.

4.1.3 The 36 airspace related incidents were categorised as follows:

- Pilot errors in operating procedures,
- Failures in see and avoid procedures, and
- Communication failures.

4.1.4 Analysis of airspace incidents, supported by information received during consultation, indicated that most incidents were caused by human factors and predominantly related to communication issues (either on the incorrect frequency, or not at all). There were a number of incidents involving poor airmanship or communication where pilots failed to communicate their intentions resulting in runway incursions or other aircraft having to take avoiding action.

4.1.5 Seven of the 15 reported incidents involving the PT operator also involved gliders and a further three incidents involved GA and gliders. These incidents were assessed as being caused by a lack of radio communication, or insufficient coordination between airspace users.

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 part	
Airspace	1	0	6	5	3	6	2	0	3	2	6	2	36
Infrastructure	0	2	0	1	0	0	0	0	0	0	0	0	3
Consequential Events	0	0	1	0	0	0	0	0	0	0	0	0	1
Technical	4	3	4	3	1	2	2	1	2	3	4	0	29
Environment	1	2	0	3	4	3	4	5	5	6	5	1	39
Operational	3	1	4	6	3	3	10	6	2	4	5	4	51
Fuel Related	0	0	0	0	0	0	1	0	0	0	0	0	1
Powerplant/ Propulsion	1	1	2	3	1	1	1	1	1	2	2	0	16
Totals	**10**	**9**	**17**	**21**	**12**	**15**	**20**	**13**	**13**	**17**	**22**	**7**	**176**

Table 1: Bathurst Accident, Serious Incidents and Incidents.

5 KEY ISSUES AND FINDINGS

5.1 Issues

5.1.1. Stakeholder feedback identified the following issues:

- Communication problems between gliders and other operators affecting situational awareness.
- No published procedures for non-standard circuit joining by powered aircraft to avoid gliders operating to the west of the aerodrome. However there have been a number of potential conflict points identified by the CASA Flying Operations Inspectors (FOI) which have been depicted to illustrate the issue.
- Contra circuit operations are not clearly understood by all aircraft operators.
- Glider tugs occasionally land on an active runway in the opposite direction to circuit traffic.
- Aircraft conducting practice instrument approaches may conflict with gliders and tugs.
- The prevailing wind direction during August and September is westerly, and gliders require continued access to runway (RWY) 26. There is no dedicated glider strip in the RWY 08/26 direction. Therefore, gliders, tugs and powered aircraft must use the same runway.
- The runway strip for RWY 08/26 is 90 metres wide with limited adjacent areas to park gliders. Therefore, gliders, tugs, tow ropes and other material are positioned within the runway strip during gliding activities, creating an impediment for other aircraft using the runway (due to obstacles inside the gable markers).
- The time taken for a glider to be positioned on RWY 08/26, connected to a tug and then take-off means the runway is unavailable for other aircraft for extended periods. Similarly, the time taken for a glider to be moved from the runway after landing restricts other aircraft from using the runway. However, work is being undertaken by Bathurst Regional Council, in conjunction with the RAAF, to provide a glider marshalling area to the north, and clear, of the RWY 08/26 flight strip. It is expected that this work, which is intended to minimise the time gliders and tugs will occupy the runway, will be completed by the end of May 2018 in time for the increased use of this runway during the August/ September period.
- Non-standard departure and arrival procedures create unpredictability and risk for other aerodrome users.
- Aircraft at the southern end of RWY 35 and aircraft preparing to take-off on RWY 26 are not visible to each other.
- Radio coverage between aircraft on the thresholds of RWY 35 and RWY 26 is unreliable because of terrain shielding.

5.2 Findings

- There are no risks to the safety of air navigation that need to be mitigated through changes to existing airspace architecture.
- Glider operations at Bathurst are generating concern for other airspace users.
- Bathurst Airport users have previously held a Bathurst Airport Users Group meeting.
- CASA Sydney Regional Office has been working with Bathurst Regional Council to encourage local interaction between airspace users.
- Recent collaboration between airspace users identified the benefit of publishing local procedures in a NOTAM for the duration of each gliding camp (see attachment D) and the possible benefits of publishing the procedures in ERSA.

5.3 Outcomes

- The OAR has determined there is no need to change the existing airspace architecture.
- The OAR has determined that there is no requirement for a Certified Air/Ground Radio Service, Aerodrome Flight Information Service or Air Traffic Service.
- The OAR recommends that the Bathurst aerodrome operator conduct regular meetings for all airport users to discuss and resolve any operational concerns.
- The OAR will monitor activity around Bathurst and seek feedback from airspace users during CASA safety seminars to determine the need for any future airspace review.
- The OAR will provide a copy of this review to the CASA Sydney Regional Office and the CASA Stakeholder Engagement Group for further consideration.

6 CONCLUSION

6.1. An assessment of the airspace incidents and feedback from stakeholders provided the OAR with sufficient information to conduct a preliminary review of the airspace around Bathurst. The review concluded there were no risks that required changes to the existing airspace architecture around Bathurst. The review has identified an opportunity to improve the safety of air navigation around Bathurst through CASA-initiated education and training programs focussed on local procedures and through the establishment of a local airspace user forum to raise issues and identify risks that need mitigation.

ANNEX A – ACRONYMS AND ABBREVIATIONS

Acronym/abbreviation	Explanation
Act	*Airspace Act 2007*
ADS-B	Automatic Dependent Surveillance - Broadcast
Airservices	Airservices Australia
AFRU	Aerodrome Frequency Response Unit
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
AAFC	Australian Air Force Cadets
ATSB	Australian Transport Safety Bureau
Bathurst	Bathurst Airport
CASA	Civil Aviation Safety Authority
CTA	Control Area
CTAF	Common Traffic Advisory Frequency
DA	Danger Area
Defence	Department of Defence
ERSA	En Route Supplement Australia
ft	feet
FL	Flight Level
FOI	Flying Operations Inspectors
GA	general aviation
H24	24 Hours per day
ICAO	International Civil Aviation Organization
IFP	Instrument Flight Procedure
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
kt	knots
LL	Lower Level
MOS	Manual of Standards
NM	nautical miles
NOTAM	Notice to Airmen
OAR	Office of Airspace Regulation
PT	Passenger Transport
QRIR	Quarterly Risk Indicator Review
RAAF	Royal Australian Air Force
RA	Restricted Area
RAPAC	Regional Airspace and Procedures Advisory Committee
REPCON	ATSB confidential reporting system
RNAV	Area Navigation
RWS	Runway strip
RWY	Runway
SEG	Stakeholder Engagement Group
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 FL 180 (east coast) or FL 245	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 other 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 ft 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 – May 2017
- *Airspace Act 2007*
- Airspace Regulations 2007
- Australian Airspace Policy Statement – 2015
- DAP East – Effective 25 May 2017
- Designated Airspace Handbook – May 2017
- En Route Supplement Australia – May 2017

ANNEX D – GLIDING NOTAM

INCREASED GFY DUE AIR FORCE CADET CAMP
GLIDERS AND TUGS WILL BCST ON AND MNT CTAF 127.35 WI 10NM AD
RWY 17/35 NON-INDEPENDENT CONTRA CCTS. PARL RWY OPS NOT PERMITTED
RECOMMENDED CIRCUIT JOIN ON UPWIND OR DOWNWIND TO AVOID THE GLD
CIRCUIT. RWY 08/26 GLIDERS AND TUGS WILL OCCUPY RWY FOR MNM TIME DRG
LAUNCH AND RECOVERY AND WILL REMAIN CLEAR OF FLT STRIP AT OTHER
TIMES. PRACTICE INSTRUMENT APPROACHES NOT RECOMMENDED DRG GFY
GLIDER LAUNCHES WILL NOT TAKE PLACE DURING REGULAR PUBLIC TRANSPORT
(RPT) OPS. CTC AIR FORCE CADETS TEL: 0408 243 348 OR 0408 443 009
FROM 12 032030 TO 12 210630
DAILY 2030/0630