# Ballarat Airspace Review

## August 2017

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# 1. Executive summary

1.0.1    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 (through the Office of Airspace Regulation (OAR)) to conduct regular reviews of the existing classifications of Australian-administered airspace. The OAR conducted an airspace review of the airspace within a 20 nautical mile (nm) radius, from the surface to 8,500 feet (ft) above mean sea level (AMSL) of Ballarat aerodrome (Ballarat). The aim of the review was to determine if the airspace architecture remains safe and fit for purpose. This review accords with CASA's regulatory philosophy which considers the primacy of air safety but also takes account of all relevant considerations, including cost.

1.0.2    Analysis of airspace incidents and stakeholder feedback determined that despite high levels of congestion generated by flying training activity in the area, there were no aviation safety risks that required changes to the existing airspace architecture. However, the review has noted opportunities where improvements could be made to enhance the safety, efficiency of airspace activity or improve equitable access.

1.0.3    Stakeholder feedback raised concerns about runway operations and radio frequency congestion within the circuit area. These concerns were focused on non-standard flying and non-standard radio procedures by both student and general aviation (GA) pilots.

## 1.1    Key Recommendations

1. Hang gliding operators should consider publishing a hang gliding symbol on charts at popular launch sites, such as Gordon and Mount Hollowback. This should be discussed at the Regional Airspace and Procedures Advisory Committee (RAPAC) meeting for implementation by Airservices Australia (Airservices). Additionally, hang gliding operators should consider participating in the Ballarat Aerodrome Advisory Committee (BAAC) meetings.

2. Flying schools from Moorabbin and Essendon would benefit from coordinating flying training activity and schedules with the ST Aerospace Academy (STAA).

3. CASA Aviation Safety Advisors should conduct a safety education program with a specific focus on radio communication procedures and local flying procedures in the Ballarat area. These seminars should involve flying schools based in Ballarat, Essendon, Moorabbin and members of the wider GA community around Ballarat.

4. STAA and the Ballarat City Council (BCC) should include information about flying training areas in the En Route Supplement Australia (ERSA).

5. Flying training organisations operating at Ballarat should participate in the BAAC meetings to raise any issues and share information with local airspace users.

6. STAA should consider the benefits of establishing a company radio frequency.

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

## Table of contents

# 2. Introduction

2.0.1   Under Sections 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.

2.0.2   CASA has developed a regulatory philosophy that will be applied to all airspace reviews. This philosophy considers the primacy of air safety but also takes account of all relevant considerations, including cost.

2.0.3   The Office of Airspace Regulation (OAR) assessed the airspace in the vicinity of Ballarat aerodrome (Ballarat) in 2011 as part of the Melbourne aeronautical study. This assessment did not raise any significant risks to airspace users around Ballarat. However, a recent review of aviation incident data around Ballarat and information provided by stakeholders raised concerns about levels of congestion created by flight training. Regular public transport (RPT) flights do not operate at Ballarat. However, the volume, nature and complexity of general aviation (GA) and flying training activity in the region justified a review by the OAR.

## 2.1   Purpose

2.1.1   The purpose of this airspace review was to determine if the airspace within a 20 nautical mile (nm) radius of Ballarat from the surface up to 8,500 feet (ft) above mean sea level (AMSL) is safe for airspace users and fit for purpose. This airspace review provides recommendations to ensure the airspace architecture is safe for all airspace users and identifies opportunities that could improve efficiency or equitable access to the airspace around Ballarat.

## 2.2   Process

2.2.1   The airspace review process included:

- Consideration of feedback from airspace users at Ballarat, Essendon, Moorabbin and Melbourne basin. Such as charter operators, flying schools, aerodrome operators, emergency service operators and general aviation organisations that use Ballarat;
- Analysis of safety incident data provided by the Australian Transport Safety Bureau (ATSB) and Airservices Australia (Airservices);
- Analysis of aircraft movement data;
- Analysis of the type and nature of aircraft operations around Ballarat;
- Identification and analysis of any concerns or risks raised by stakeholders; and
- A review of the  existing airspace architecture.

2.2.2   The review included consideration of a proposed extension of the main runway 18/36 from 1,245 metres (m) to 2,000 m in length, and widening from 30 m to 45 m.

## 2.3   Overview of Australian airspace classifications

2.3.1   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 are not currently used in Australia. The classification of airspace also determines the type and nature of aviation operations permitted in that airspace.

2.3.2   Class G airspace is predominantly used by visual flight rules (VFR) aircraft that do not require surveillance, separation or navigation assistance. VFR aircraft generally fly in good

weather so they can navigate using visual references on the ground. Aircraft operating in Class C, D and E are provided with a control and surveillance service by Airservices and generally comprise a mix of VFR and instrument flight rules (IFR) operations.

2.3.3   The Ballarat review area is within Class G airspace and accommodates VFR and IFR aircraft. Refer to Figure 1, below.
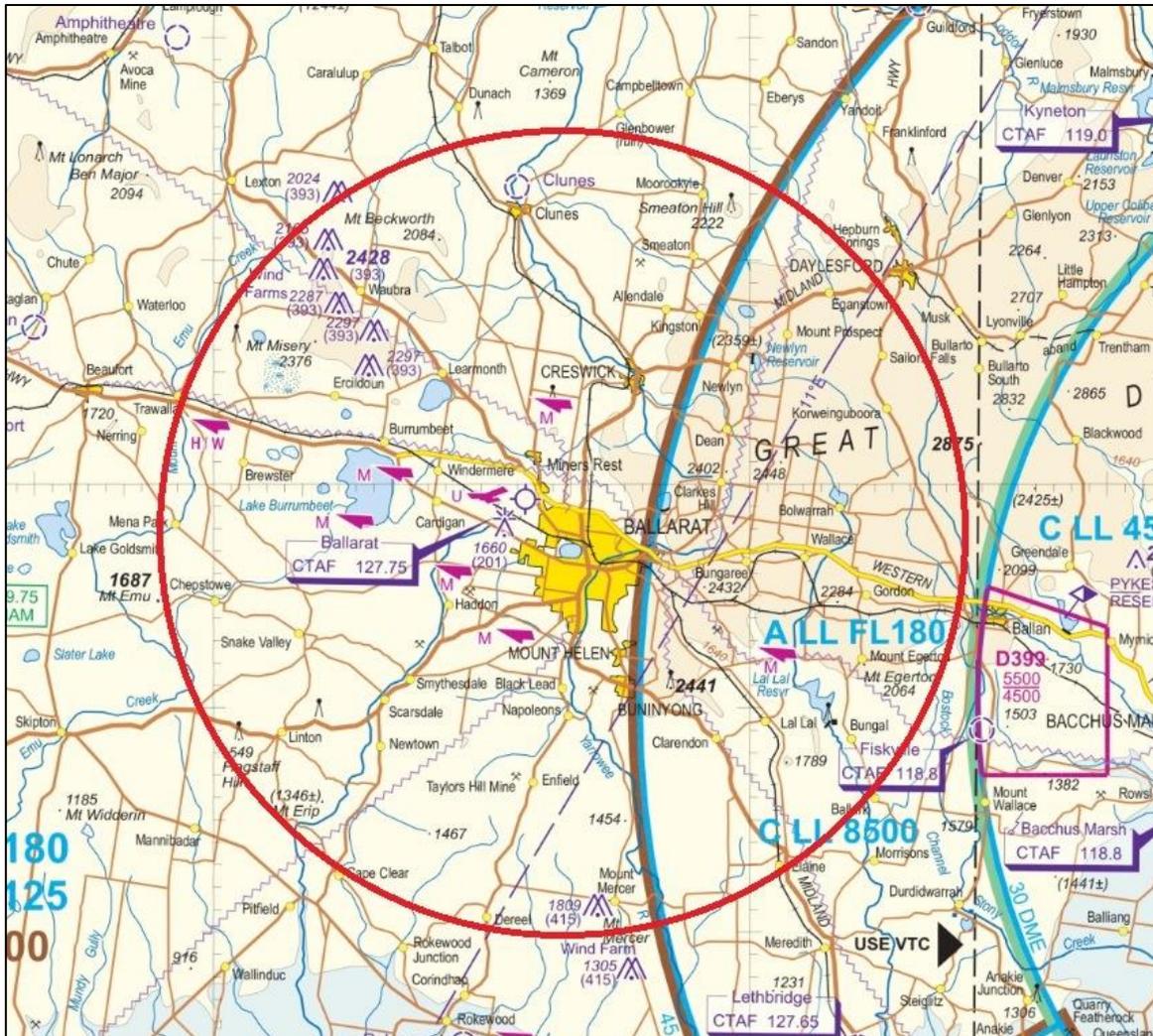


Figure 1: Melbourne Visual Navigation Chart (VNC) extract of the Ballarat review area (Airservices: Effective date 26 May 2016).

## 2.4      Air navigation service providers in Ballarat

2.4.1   The review area is outside controlled airspace. The lower limit of Class E airspace extends from 8,500 ft AMSL to the lower level of Class C at flight level (FL) 125, with Class A airspace from FL180.

2.4.2   The overlying controlled airspace is used by Airservices to coordinate and sequence traffic from the West into Melbourne. Airservices is not considering any changes to the airspace around Ballarat.

2.4.3   Air traffic control (ATC) provides a flight following service for IFR aircraft within the review area. ATC may also provide a flight following service for VFR aircraft in the review area upon pilot request and if controller workload permits. A directed traffic information service is provided from Melbourne air traffic services centre to all IFR aircraft operating in Class G airspace within the review area.

## 2.5    Surveillance

2.5.1    Airservices operates a secondary surveillance radar (SSR) at Mount Macedon (North West of Melbourne) that provides approximately 255 nm radius coverage from the radar site (includes the Ballarat review area). Airservices also operates a SSR at Gellibrand Hill approximately 68 nm to the South of Ballarat. Radar coverage above 5,000 ft AMSL in the review area is provided by a combination of data from both radars.

2.5.2    The automatic dependent surveillance-broadcast (ADS-B) system includes a ground station at Mount Macedon (100 kilometres (km) from Ballarat). Following the IFR mandate for carriage of ADS-B equipment on 2 February 2017, there has been an increase in surveillance information that can be provided to aircraft in the review area.

# 3.  Airspace and aerodrome

3.0.1    Ballarat is a registered aerodrome located 8 km North West of Ballarat city centre and is owned and operated by the Ballarat City Council (BCC). BCC estimates that St Aerospace Academy (STAA) flying school activity accounts for approximately 65% of all movements in the area, 25% of activity involves other flying schools (including the Ballarat Aero Club) and the remaining 10% involves itinerant aircraft.

3.0.2    There are no restricted or danger areas within the review area. However, there is a Danger Area (DA) (D399) in close proximity to the eastern border of the review area. This DA supports gliding operations at Bacchus Marsh. This DA was not raised as an issue by airspace users.

3.0.3    Two windfarms are located approximately 20 nm to the North West and South of Ballarat but these did not generate any concerns for airspace users in the Ballarat area. Local agricultural pilots raised concerns about the impact of wind farms on their crop dusting activities between the individual turbines but this was not addressed by this airspace review.

3.0.4    There is one published aeroplane landing area (ALA) located approximately 18 nm North of Ballarat called Clunes. Refer to Figure 2, below.

## 3.1    Flying training areas

3.1.1    Two flying training areas situated to the West and North of Ballarat are used by STAA (Figure 2). Information regarding these training areas is not easily available to the public.
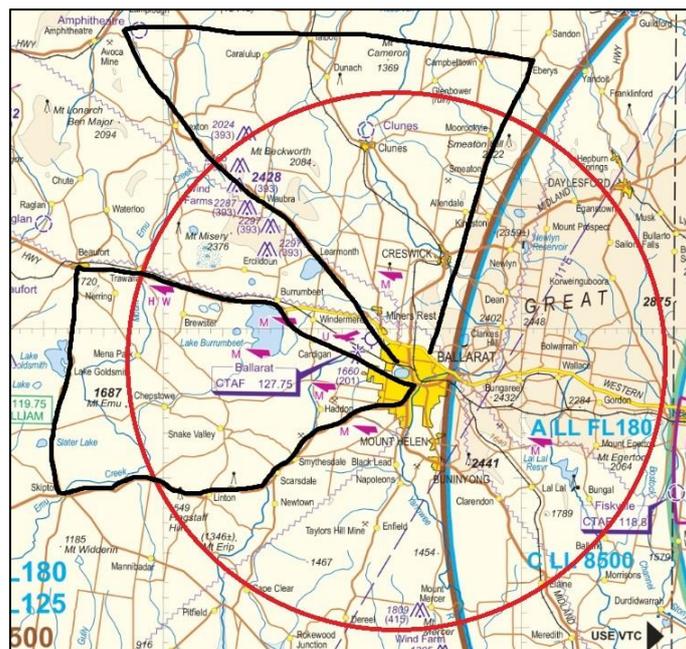


Figure 2: Two STAA training areas to the West and North of Ballarat aerodrome.

## 3.2     Aerodrome facilities

3.2.1    Ballarat has three runways (two sealed and one grass). The aerodrome facilities include runway lighting on runways 18/36 and 05/23, and a re-fuelling facility.

| Runway | Length | Width | Type |
|--------|--------|-------|------|
| 18/36 | 1,245 m | 30 m | Asphalt |
| 05/23 | 1,265 m | 30 m | Asphalt |
| 13/31 | 568 m | 30 m | Grass |

Table 1: Ballarat runway details (En Route Supplement Australia, November 2016)

3.2.2    BCC currently imposes a circuit training curfew between 11pm to 6am. This curfew is detailed in the En Route Supplement Australia (ERSA) entry for Ballarat and there are no plans to alter this curfew in the future. The Ballarat ERSA entry also includes a restriction on itinerant aircraft conducting circuits at any time. This entry was included by BCC in 2016 based on concern over growth in annual traffic movements (approximately 50,000 in 2011) and the impact this growth would have on maintaining a safe operating environment for aviation (considering runway capacity and facilities at the time). There are no plans by BCC to change the circuit operating restriction for itinerant aircraft.

3.2.3    Ballarat is currently a fee-free aerodrome. However, BCC may consider charging landing fees in the future. The introduction of a landing fee may impact the level of aviation activity at Ballarat in the future.

## 3.3     Future facility and infrastructure plans

3.3.1    BCC has confirmed they are planning to seek funding from the Victorian State government to extend runway 18/36 from 1,245 m to 2,000 m, and to widen the runway from 30 m to 45 m. Further information can be found in the 2013-2033 Ballarat Airport Master Plan[2].

3.3.2    Proposed airport works include a new parallel taxiway to support the extended runway. This would reduce the need for aircraft to backtrack on the runway.

3.3.3    BCC may promote their upgraded capability to attract emergency services operators. Larger aircraft used in fire-bombing activities could operate at Ballarat during the summer bush fire season.

## 3.4     Analysis of Ballarat aircraft traffic movements

3.4.1    BCC employs Avdata Australia to provide aircraft movement data. However, this data is only collected every three to four years. The most recent data is dated 2014 and indicates aircraft movements at Ballarat had been decreasing since peaking in 2011. Ballarat is a high density training aerodrome for both STAA and other GA flying organisations. The data in Figure 3 shows the monthly movements from 01 August 2013 to 31 July 2014.

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[2] http://www.ballarat.vic.gov.au/pbs/city-strategy/strategic-projects-and-frameworks/completed/ballarat-airport-masterplan.aspx
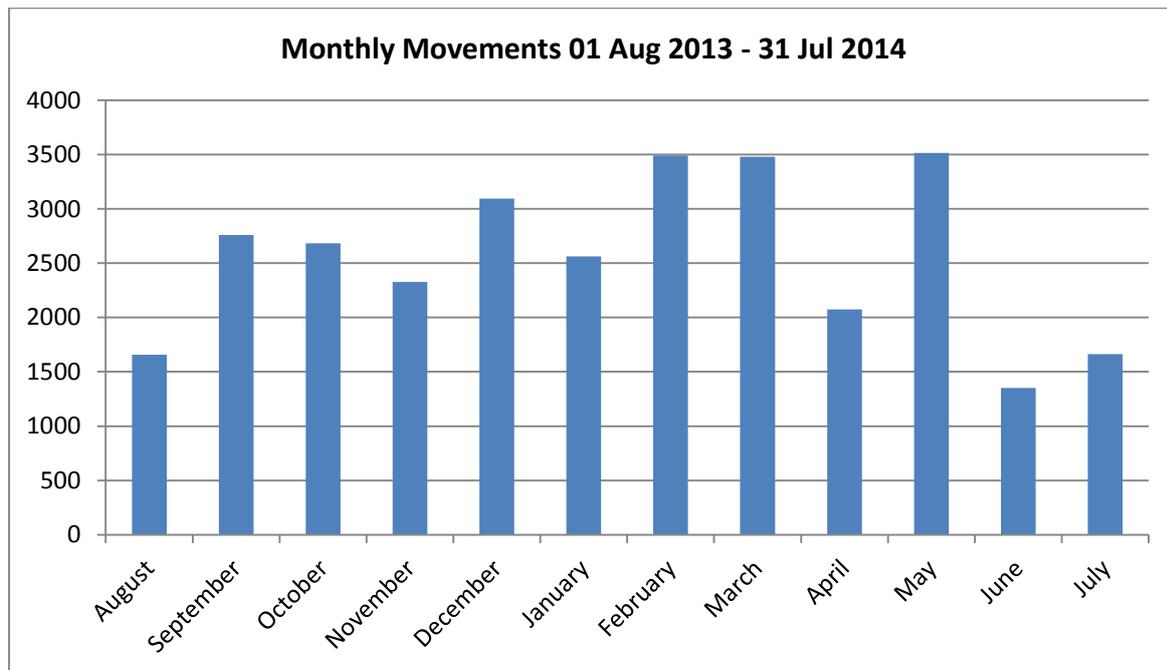
Figure 3: Ballarat monthly movements from 01 August 2013 to 31 July 2014 (Avdata Australia 2014).

3.4.2   Analysis of traffic data shows:

- Traffic increases during December to March (inclusive) coincide with good weather and flying conditions. The drop in traffic around January can be attributed to the holiday period and to new STAA flying student's conducting classroom study in the first month of their training program. STAA confirmed this flying training traffic pattern will be consistent in the future.

- Decreases in traffic from June to August coincide with STAA moving their winter operations to Deniliquin in New South Wales (NSW) to take advantage of better weather conditions. The departure of STAA flying training temporarily reduces congestion at Ballarat.

- Aircraft movements for the period 01 August 2013 to 31 July 2014 (30,563) were approximately 39% lower when compared to the movements between August 2010 and July 2011 (more than 50,000).

3.4.3   Aircraft operators and BCC advise that they will restrict annual aircraft movements to a maximum of 30,000 to avoid capacity and infrastructure issues at the aerodrome.

# 4. Summary of incidents and accidents

## 4.1 Aviation safety incident reports

4.1.1   There were 17 airspace related incidents between 01 January 2010 and 01 December 2016. These incidents related to:

- Radio communication errors including incorrect frequency monitoring and broadcasts,
- Lack of situational awareness by pilots,
- Lack of radio communication from both ground and airborne aircraft,
- Language proficiency problems during radio communications,
- Non-standard radio calls causing confusion for other pilots,
- Incorrect circuit joining procedures, and
- Lack of pilot experience.

| Ballarat - airspace accidents, serious incidents and incidents | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Airspace Related | 2 | 3 | 3 | 0 | 5 | 3 | 1 |

Table 2: Ballarat Basin recorded airspace accidents, serious incidents and incidents (ATSB)

| Ballarat | Accident and Incident numbers | | | | Causal factors | | | |
|---|---|---|---|---|---|---|---|---|
| Occurrence Year | No of Accidents | No of serious Incidents | No of Incidents | Total Accidents and Incidents | See and Avoid | Pilot Procedures Lapses | Radio Communication lapses | ATC Procedure Lapses |
| 2010 | 3 | 1 | 1 | 5 | 2 | 2 | 1 | 0 |
| 2011 | 3 | 0 | 3 | 6 | 2 | 2 | 0 | 0 |
| 2012 | 7 | 2 | 1 | 10 | 1 | 2 | 0 | 0 |
| 2013 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 2014 | 9 | 4 | 1 | 14 | 4 | 4 | 2 | 0 |
| 2015 | 10 | 0 | 3 | 13 | 2 | 2 | 0 | 0 |
| 2016 | 4 | 1 | 0 | 5 | 1 | 1 | 1 | 0 |
| **Total** | **38** | **8** | **9** | **55** | **12** | **13** | **4** | **0** |

Table 3: Ballarat accidents, serious incidents and incidents with causal factors (ATSB).

4.1.2   Analysis of incident data between 2010 and 2016 indicates that approximately 45% of incidents involved see and avoid pilot error and pilot procedure lapses when operating in Class G airspace.

4.1.3   Despite a reduction in total movements at Ballarat between 2011 and 2014, the number of incidents has not declined.

4.1.4   OAR analysis of all incidents determined that the airspace architecture around Ballarat is not a contributing factor to the number or nature of aviation incidents in the area. The review concluded that the airspace architecture around Ballarat is fit for purpose. However, CASA will provide additional education and training to local flying training organisations and GA pilots to help improve awareness of factors that may contribute to airspace incidents in the review area.

## 5. Stakeholder Feedback

5.0.1   Stakeholder consultation (see Annex C for list of stakeholders) was conducted during January and February 2017.

### 5.1   Issues

Issue: ATC raised concerns regarding congestion in the airspace when IFR flights are operating and the resultant increased workload required to ensure all IFR aircraft are aware of the nearby VFR aircraft.

- Finding: Evidence showed the volume of IFR flights at Ballarat has reduced after Airservices decommissioned a number of ground based navigation aids in the region. ATC confirmed they are capable of managing the current workload.

> Recommendation: ATC to monitor the level of IFR aircraft in the area and discuss future airspace issues with the OAR.

Issue: Infringements into controlled airspace average one per month on the Eastern side of the review area.

- Finding: The number of incidents is reflected in incident data and stakeholder feedback. However, ATC provides navigation information to pilots in an attempt to reduce the number of infringements.

> Recommendation: ATC continue to assist aircraft approaching controlled airspace when necessary and CASA conduct education and information session to local pilots and students specific to operating in close proximity to controlled airspace.

Issue: ATC controllers experience language proficiency problems when trying to communicate with STAA students. This can result in the controllers having to repeat instructions to student pilots or requesting confirmation a pilot has received the radio transmission. This is increasing ATC workload.

- Finding: STAA confirmed an English proficiency standard is included in their curriculum and students are trained to make standard radio calls to minimise language problems.

> Recommendation: STAA continue maintaining English language standards for their students and conduct internal reviews to ensure that students are complying with the standard radio call procedures.

Issue: Hang gliding operators were concerned that there is insufficient awareness by the GA community of their operations around Ballarat.

- Finding: Airspace users in the review area confirmed they were aware of the hang gliding operations and have no issues with the location of these activities.

> Recommendation: Hang gliding operators should publish a hang gliding symbol on charts at popular launch sites, such as Gordon and Mount Hollowback. This should be discussed at the Regional Airspace and Procedures Advisory Committee (RAPAC) meeting for implementation by Airservices. Additionally, hang gliding operators should consider participating in the Ballarat Aerodrome Advisory Committee (BAAC) meetings.

Issue: Airport users raised concerns about increasing congestion at Ballarat if BCC approve further training activity based at Ballarat.

- Finding: The BCC have no intention of pursuing a second large flying school and traffic movements will be capped as close to 30,000 per year.

> Recommendation: BCC should consult with Ballarat airspace users before considering any future increase in flying training activity at Ballarat.

Issue: Aircraft operators reported frequent circuit congestion when visiting Ballarat. Although Essendon and Moorabbin flying schools cannot conduct circuits, the level of circuit activity impacts landing procedures for visiting aircraft.

- Finding: The ERSA entry restricting visiting aircraft from conducting circuits has proven successful in reducing traffic movements and circuit congestion.

- Finding: STAA company policy requires student flights to hold in the training area if the circuit is congested.

Recommendation: Flying schools from Moorabbin and Essendon would benefit from coordinating flying training activity and schedules with STAA.

Issue: STAA concerned that visiting GA aircraft are using non-standard procedures at Ballarat. This includes:

- Aircraft not making required radio calls (specifically inbound),

- Aircraft joining the circuit in the wrong direction, and

- Non-standard radio calls including poor terminology in radio calls from GA pilots.

- Finding: Feedback from stakeholders supported the concerns raised by STAA about non-standard procedures.

Recommendation: CASA Aviation Safety Advisors should conduct a safety education program with a specific focus on radio communication procedures and local flying procedures in the Ballarat area. These seminars should involve flying schools based in Ballarat, Essendon, Moorabbin and members of the wider GA community around Ballarat.

Issue: Runway congestion caused by aircraft back-tracking after landing.

- Finding: Back-tracking is required due to the lack of a full length parallel taxiway with sufficient exit points.

Recommendation: BCC should consider the safety and efficiency benefits of constructing a parallel taxiway.

Issue: External training organisations and visiting aircraft are not aware of the STAA training areas located to the North and West of the aerodrome.

- Finding: The two local training areas are not published in the ERSA and the details are not well known to other airspace users.

Recommendation: BCC publishes information on the training areas in ERSA.

Observation: STAA understands the high volume of student flight training could be a safety risk to other pilots. However, most operators using Ballarat have a reasonable appreciation of the nature of activity at the aerodrome and the potential for airspace congestion.

Recommendation: BCC publishes information in ERSA about potential airspace congestion caused by flight training activity. Local aircraft operators should also participate in the three monthly BAAC meetings where there is an opportunity for airspace users to raise and discuss concerns related to airspace or aerodrome operations.

Issue: Stakeholders raised concerns that IFR training aircraft are incorrectly approaching Ballarat without the required additional 1,000 ft of height as stated in the ERSA.

- Finding: There was evidence to validate these concerns.

Recommendation: CASA should provide specific information to IFR pilots that frequent Ballarat about the additional 1,000 ft procedure.

Issue: Melbourne centre frequency is not available on the ground at Ballarat.

- Finding: The very high frequency (VHF) coverage is limited to 300 ft above ground level in the Ballarat area. The volume of IFR traffic is currently low, however if this were to significantly increase, it would be beneficial for Airservices to review the VHF coverage on the ground at Ballarat. The limited VHF coverage on the ground has been determined to be an efficiency issue, and does not present a safety risk.

  Recommendation: If IFR traffic volumes increase or present a safety concern in the future, Airservices should ensure the Melbourne centre frequency area of coverage is appropriate for communication with IFR aircraft on the ground at Ballarat.

Issue: Common traffic advisory frequency (CTAF) radio frequency 127.75 is congested by non-operational training broadcasts.

- Finding: This was a valid concern raised by many aircraft operators.

  Recommendation: STAA should consider implementing a company radio frequency for communication between instructors and students. This should include a risk assessment that considers the possibility of flight training aircraft operating on company frequency instead of CTAF.

Observation: Multiple aircraft were conducting simultaneous circuits on runways 05 and 36.

- Finding: STAA have procedures in place when operating simultaneous circuit operations for crosswind training, however STAA may need to monitor compliance by their own pilots with the procedures.

# 6.  Conclusion

6.0.1    The OAR has conducted a review of airspace architecture and procedures around Ballarat to ensure the airspace is safe and fit for purpose for all airspace users. The review also ensured that the airspace complied with the requirements of the *Airspace Act (2007)*, Airspace Regulations (2007), the Australian Airspace Policy Statement (2015), the Minister's Statement of Expectation (2017) and CASA's Regulatory Philosophy.

6.0.2    The nature of operations at Ballarat consists mostly of high volumes of flight training aircraft (approximately 90%) and itinerant aircraft (approximately 10%).

6.0.3    A number of incidents and issues were identified during the review, but most of these were typical of a high density flight training environment and the risks can be mitigated by CASA through further education and training. Additional information in ERSA and the conducting of safety seminars will help to reduce congestion in the circuit area and should improve situational awareness for all pilots operating in the Ballarat area.

6.0.4    The OAR has determined that the airspace architecture around Ballarat is fit for purpose and does not require amendment. The OAR will review aircraft movement data for Ballarat when available in 2018/19 to determine the need for a further review of the airspace around Ballarat. The OAR will continue to conduct regular meetings with airspace users in the region and monitor incident data to ensure there are no emerging risks to airspace users that need to be addressed.

# ANNEXES

A. Acronyms and abbreviations
B. Australian airspace structure
C. Consultation
D. References

## Annex A – Acronyms and abbreviations

| Abbreviation | Explanation |
|---|---|
| Act | *Airspace Act 2007* |
| ADS-B | Automatic Dependent Surveillance-Broadcast |
| Airservices | Airservices Australia |
| AMSL | above mean sea level |
| ATC | air traffic control |
| ALA | aeroplane landing area |
| ATSB | Australian Transport Safety Bureau |
| BAAC | Ballarat Aerodrome Advisory Committee |
| Ballarat | Ballarat aerodrome |
| BCC | Ballarat City Council |
| CASA | Civil Aviation Safety Authority |
| CTAF | common traffic advisory frequency |
| DA | danger area |
| ERSA | En Route Supplement Australia |
| FL | flight level |
| ft | feet |
| GA | general aviation |
| ICAO | International Civil Aviation Organization |
| IFR | instrument flight rules |
| ILS | instrument landing system |
| km | kilometres |
| nm | nautical miles |
| NSW | New South Wales |
| OAR | Office of Airspace Regulation |
| RAPAC | Regional Airspace and Procedures Advisory Committee |
| RPT | regular public transport |
| SSR | secondary surveillance radar |
| STAA | St Aerospace Academy |
| VFR | visual flight rules |
| VHF | very high frequency |
| YWE | Yarrowee low sector |

## 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 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 are 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, Jandakot, 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 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 | 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 – Consultation

The following organisations were invited to provide input to the study.

| Organisation | Position |
|---|---|
| AeroRescue | Head Office |
| AeroVision | Head Office |
| Air Adventure | Head Office |
| Air Ambulance Victoria | Air Operations |
| Aircraft Owners and Pilots Association (AOPA) | Executive Director |
| Airservices Australia | ATC Shift Manager |
| Airservices Australia | Senior Safety Programs Specialist |
| Alliance Airlines | Head Office |
| Amber Aviation | Flight Operations |
| Amor & Alizzi Pty Ltd | Head Office |
| Australasian Jet | Chief Pilot |
| Australian Airports Association (AAA) | Chief Executive Officer |
| Australian and International Pilots Association (AIPA) | President |
| Australian Balloon Federation (ABF) | Victoria and Tasmania Delegate |
| Australian Corporate Jet Centres | Chief Pilot |
| Australian Federation of Air Pilots | President |
| Australian Jet Adventures | Head Office |
| Australian Parachute Federation (APF) | Chief Executive Officer |
| Australian Pilot Training Alliance | Chief Executive Officer |
| Australian Transport Safety Bureau (ATSB) | General Manager, Aviation Safety Investigations |
| Avia Aviation | Head Office |
| Bacchus Marsh Aerodrome Management Inc | President |
| Ballarat (Geelong) Sports Aviators | Head Office |
| Ballarat Aero Club Pty Ltd | President |
| Ballarat Aviation Museum | Head Office |
| Ballarat Gliding Club | President |
| Beaufort Gliding Club | Chief Flying Instructor |
| Bendigo Aviation Services (Moorabbin Aviation Services) | Head Office |
| Bendigo Flying Club | President |
| Bendigo Gliding Club | Head Office |
| Bristow Helicopters | Head Office |
| CASA | Aviation Safety Advisor |
| City of Ballarat Council | Airport Manager and Program Development Officer |
| Civil Air | President |
| Composite Components (glider Maintenance) | Head Office |

| Organisation | Position |
|---|---|
| County Helicopters Pty Ltd | Head Office |
| Department of Defence | Defence Liaison Officer |
| Emergency Management Victoria (EMV & CFA) | A/General Manager Operations and Response |
| Erickson Aircrane | Head Office |
| ExecuJet Aviation Group | Chief Pilot |
| Executive Airlines | Head Office |
| Field Air Ballarat Pty Ltd | Chief Pilot |
| Flight Academy Australia | Chief Flying Instructor and Flight Instructor |
| Flight Group | Head Office |
| Free Spirit Airlines | Head Office |
| GAM Group | Chief Pilot |
| Gliding Federation of Australia | Regional Manager Operations Victoria and Tasmania |
| Hang Gliding Federation of Australia | President |
| Heli Experiences | Head Office |
| Heli-Serv Tours | Head Office |
| Helivista | Head Office |
| HEMS 3 Air Ambulance Victoria | Head Office |
| Inbound Aviation | Chief Pilot |
| Interair | Chief Pilot and Chief Flying Instructor |
| Jet City / Jet City Rescue | Head Office |
| Jetgo | Head Office |
| Kefford Aviation | Head Office |
| Kirkhope Aviation Pty Ltd | Chief Pilot |
| Linfox Air National Australia | Head Office |
| Melbourne Flight Training | Chief Executive Officer |
| Melbourne Gliding Club | Head Office |
| Microflight Helicopter Services | Head Office |
| Moorabbin Aviation Services | Chief Flying Instructor |
| Moorabbin Flying Services | Head Office |
| New Horizons Microlight School | Head Office |
| Oasis Flight Training | Chief Flying Instructor and Pilot Examiner |
| Oxford Aviation Academy | Operations Manager |
| Pearson Aviation | Flying Instructor |
| Pel Air (Air Ambulance contract VIC) | Operations Manager |
| Peter Bini Advanced Flight Training | Chief Flying Instructor |
| Point Cook Aviation | Head Office |
| Point Cook Flying Club | President |
| Professional Helicopter Services | Head Office |

| Organisation | Position |
|---|---|
| RAPAC VIC | VIC RAPAC Convenor |
| Recreational Aviation Association of Australia | Chief Executive Officer |
| Regional Aviation Association of Australia (RAAA) | Chief Executive Officer |
| RMIT Flight Training | CFI/Chief Pilot |
| Royal Flying Doctor Service South Eastern Section | Head Office |
| Royal Victorian Aero Club | Chief Flying Instructor and Chief Pilot |
| Sarge's Light Sport Aviation | Head Office |
| Sharp Airlines | Head Office |
| Shortstop Aviation | Head Office |
| Soar Advanced Flight Training | Chief Executive Officer |
| Southern Cross Jets | Head Office |
| ST Aerospace Academy (Australia) | Chief Flying Instructor / Head of Operations |
| Tarago Valley School of Aviation (TVSA) | Head of Operations |
| The Helicopter Group | Head Office |
| Toll Aviation Fixed Wing | Head Office |
| Toll Aviation Helicopters | Head Office |
| Tristar Aviation | Deputy Chief Flying Instructor |
| Victorian Police Air Wing | Pilot |
| Vortex Air | Chief Flying Instructor |
| Xjet | Owner and Managing Director |

## ANNEX D – References

- Aeronautical Information Publication – May 2016
- *Airspace Act 2007*
- Airspace Regulations 2007
- Australian Airspace Policy Statement – 2015
- Designated Airspace Handbook – May 2016
- En Route Supplement Australia – November 2016
- Ballarat Airport Master Plan 2013-2033