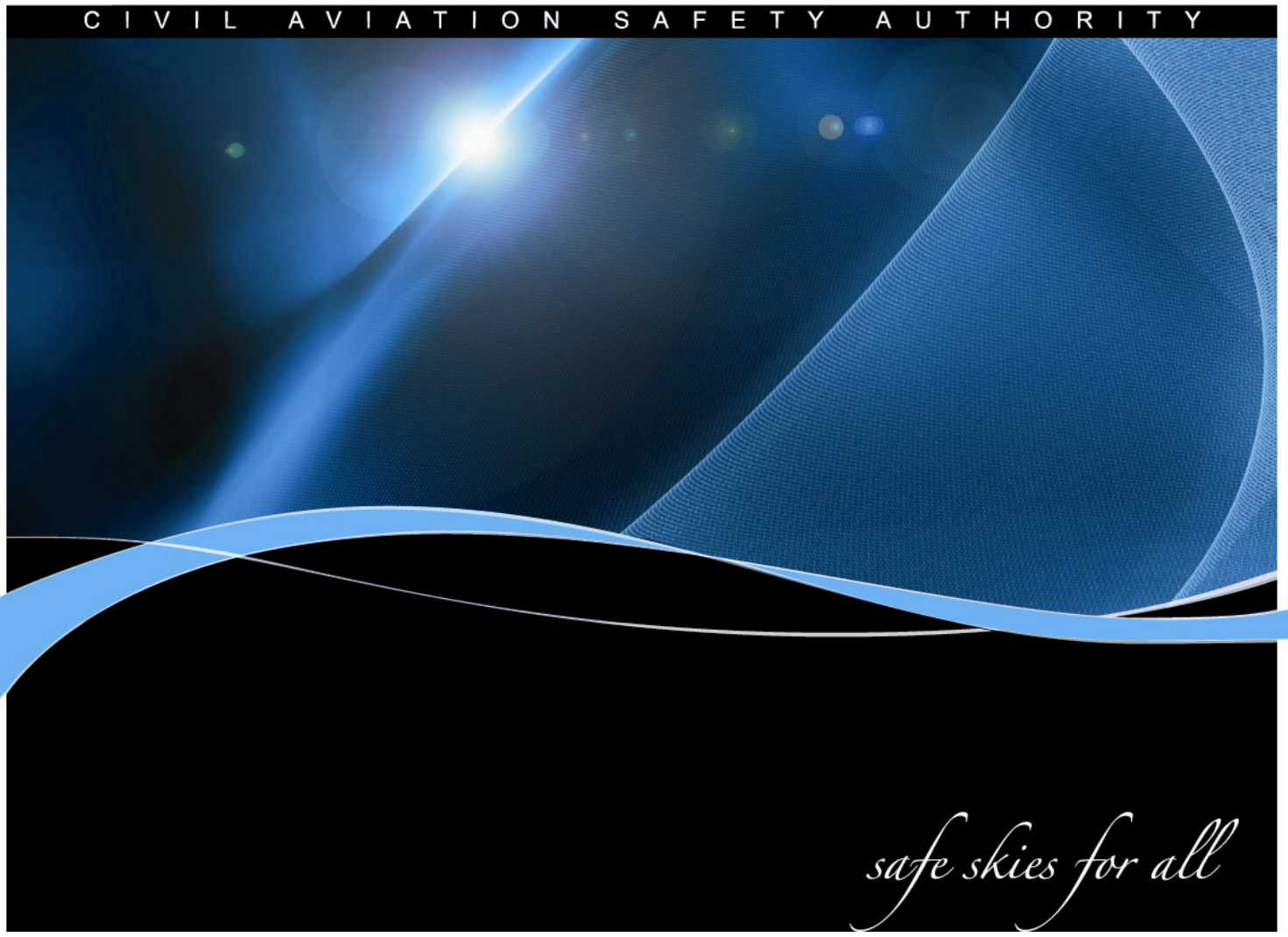
Australian Government
Civil Aviation Safety Authority
www.casa.gov.au

Trim Ref: ED09/60063
File Ref: EF09/3471

Airspace Review of Albury

July 2009



DOCUMENT SPONSOR: Office of Airspace Regulation (OAR)

Contents

1. Introduction

1.1 Overview of Australian Airspace

The Office of Airspace Regulation (OAR)[1] within the Civil Aviation Safety Authority (CASA) has sole carriage of the regulation of 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 take into account the capacity of Australian-administered airspace to accommodate changes to its use.

In line with the International Civil Aviation Organization (ICAO) Annex 11 and as described in the Australian Airspace Policy Statement (AAPS), Australian airspace is classified as Class A, C, D, E and G depending on the level of service required to manage traffic safely and effectively. Class B and F are not currently used in Australia. The classification determines the category of flights permitted and the level of air traffic services (ATS) provided. Annex B provides details of the classes of airspace used in Australia. Within this classification system aerodromes are either controlled (i.e. Class C or Class D) or non-controlled.

Australia has notified ICAO of the inclusion of an additional air traffic control procedure termed General Aviation Aerodrome Procedures (GAAP), used in Class D airspace. GAAP was specifically designed to handle large numbers of Visual Flight Rules (VFR) operations. The following are presently GAAP aerodromes; Archerfield, Bankstown, Camden, Jandakot, Moorabbin and Parafield.

Non-controlled aerodromes in Australia are subject to either Common Traffic Area Frequency (CTAF) or designated CTAF (radio required) (CTAF(R)) procedures; the latter requiring all aircraft operating at the aerodrome to be equipped with a serviceable Very High Frequency (VHF) radio.

1.2 Purpose

The purpose of this Airspace Review was to conduct a risk assessment of the airspace within the vicinity of Albury, New South Wales (NSW). The review forms part of the OAR Work Program as required by the Act.

1.3 Scope

The scope of the review includes identification and consultation with stakeholders to gather necessary data and information related to airspace issues around the Albury aerodrome. As a minimum this includes consultation with regular passenger transport operators, charter aircraft of non-freight carrying operations, flying training schools, military operators, emergency services operators and the aerodrome operator.

The scope of this review is not intended to examine aerodrome facilities and infrastructure issues unless any weakness or failings in these areas have a significant impact on the safety of airspace operations the vicinity of Albury.

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

1.4 Objective

The objective of this Review is to examine the airspace around Albury aerodrome to determine the appropriateness of the current airspace classification and the level of aviation services provided. This was accomplished by:

a. Analyses of current traffic levels and mix of aircraft operations within the existing airspace in relation to the level of services provided;
b. Identifying any threats to the operations, focussing as a priority on the safety and protection of Passenger Transport Services (PTS);
c. Identifying appropriate and acceptable risk mitigators to the known threats;
d. Carrying out a qualitative and quantitative risk assessment of the current airspace environment and the expected impact of any changes;
e. Investigating through stakeholder consultation, the appropriateness of the current airspace classification, access issues, expected changes to the current traffic levels and mix of aircraft operations within the existing airspace.
f. Reviewing extant Aeronautical Information Publications (AIP) entries for applicability;
g. Ensuring that the issues are passed onto the relative stakeholder group for their consideration; and
h. Providing assurance to the Group General Manager (GGM) OAR of the levels of airspace risk associated with Albury. The review will provide guidance to OAR management on the requirements for an Aeronautical Study.

2. Airspace

During hours of control tower operation, the airspace within 20 nautical miles (nm) of Albury aerodrome (hereafter referred to as “Albury”) is predominately controlled airspace (either Class C or Class D) from the surface (SFC) to Flight Level (FL) 180.

Class A airspace exists above FL180.

Outside 16 nm to the south-east and north-west of Albury, Class G (i.e. uncontrolled) airspace exists from the surface to 8,500 feet (ft) Above Mean Sea Level (AMSL) and Class E airspace from 8,500 ft AMSL to FL125. Class C airspace exists between FL125 and FL180. Class A airspace exists above FL180.

Outside tower hours, all Class C and Class D airspace below 8,500ft AMSL is reclassified as Class G airspace.

Outside tower hours, CTAF(R) procedures apply at the aerodrome.

Figure 1: Extract from Albury Visual Terminal Chart (VTC) showing the area around Albury.

Restricted Area: The declaration of a Restricted Area (RA) creates an airspace of defined dimensions within which the flight of aircraft is restricted in accordance with specified conditions. Clearances to fly through an active RA are generally only withheld when activities hazardous to the aircraft are taking place, or when military activities require absolute priority. RAs are mainly declared over areas where military operations occur. However, RAs have also been declared to cater for communications and space tracking operations or to control access to emergency or disaster areas. RAs are generally promulgated at specified times and dates. For example, a temporary RA may be declared for special events where there may be a public safety issue – such as the Avalon Air Show or the Commonwealth Games.

A Restricted Area (R 368) exists 3 nm to the east of the runway 25 threshold. The restricted area extends from the surface to 2,200ft AMSL and is a circle of 0.50 nm radius, centred on 36 03 35S 147 01 38E. The area is used by the Army for explosives demolition during hours notified by Notice to Airmen (NOTAM). The Precision Approach Path Indicator (PAPI) landing aid, when approaching from the east, is not to be used beyond 3 nm from the aerodrome due to the Restricted Area.

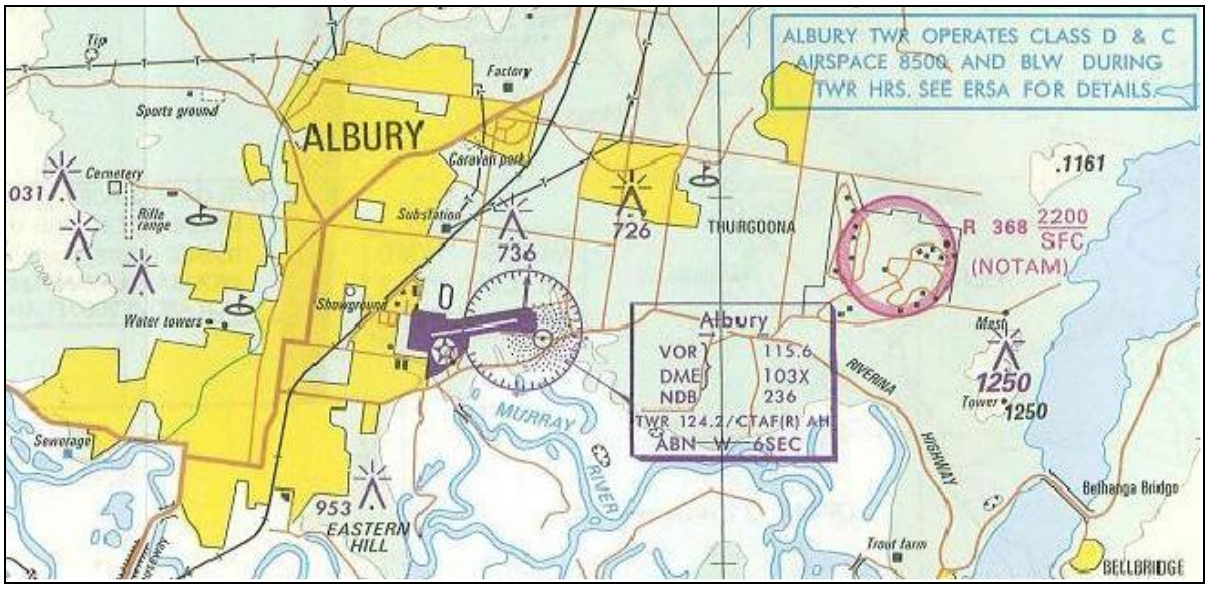


Figure 2: Extract from Albury VTC showing the Restricted Area (R 368)

Prohibited Area: The declaration of a Prohibited Area (PA) defines an area through which aircraft may not fly. PAs have activity times and lateral and vertical limits.

Danger Area: The declaration of a Danger Area (DA) defines airspace within which activities dangerous to the flight of aircraft may exist at specified times. Approval for flight through a DA outside controlled airspace is not required. However pilots are expected to maintain a high level of vigilance when transiting DAs.

There are no Prohibited or Danger areas within 20 nm of Albury.

3. Aerodrome and Infrastructure

3.1 Background

Albury is a certified aerodrome, owned and operated by the Albury City Council. It is located approximately 5 kilometres east of the city, at an elevation of 531ft AMSL.

Albury is the third busiest aerodrome in Regional NSW (after Williamtown and Coffs Harbour), with more than 250,000 passengers passing through the terminal each year and over 200 flights a week in and out of the city.

The aerodrome has a control tower with operating hours as specified in the En Route Supplement of Australia (ERSA).

Services to Sydney are provided by QantasLink, Regional Express (REX) and Virgin Blue Airlines. REX flies daily to Melbourne and Brindabella Airlines flies to Canberra every day except Saturday. Charter services are also available.

Regular aircraft types operating at Albury include De Havilland DHC8 (Dash 8), SAAB SF340, Embraer ERJ-170, Beechcraft BE-200 and the Metro III. Small rotary wing aircraft operate at Albury, including the Robinson R22 and R44, the Hughes 269 and the Bell 206.

The Air Centre Albury began as a flying school in 1968. Operations soon expanded to include charter flights for local businessmen. In the early 1980s the business expanded to include aircraft maintenance services. The company opened a hangar in Bathurst, where they operate a flying school and an aircraft maintenance facility. The company now operate under the name SmartAir.

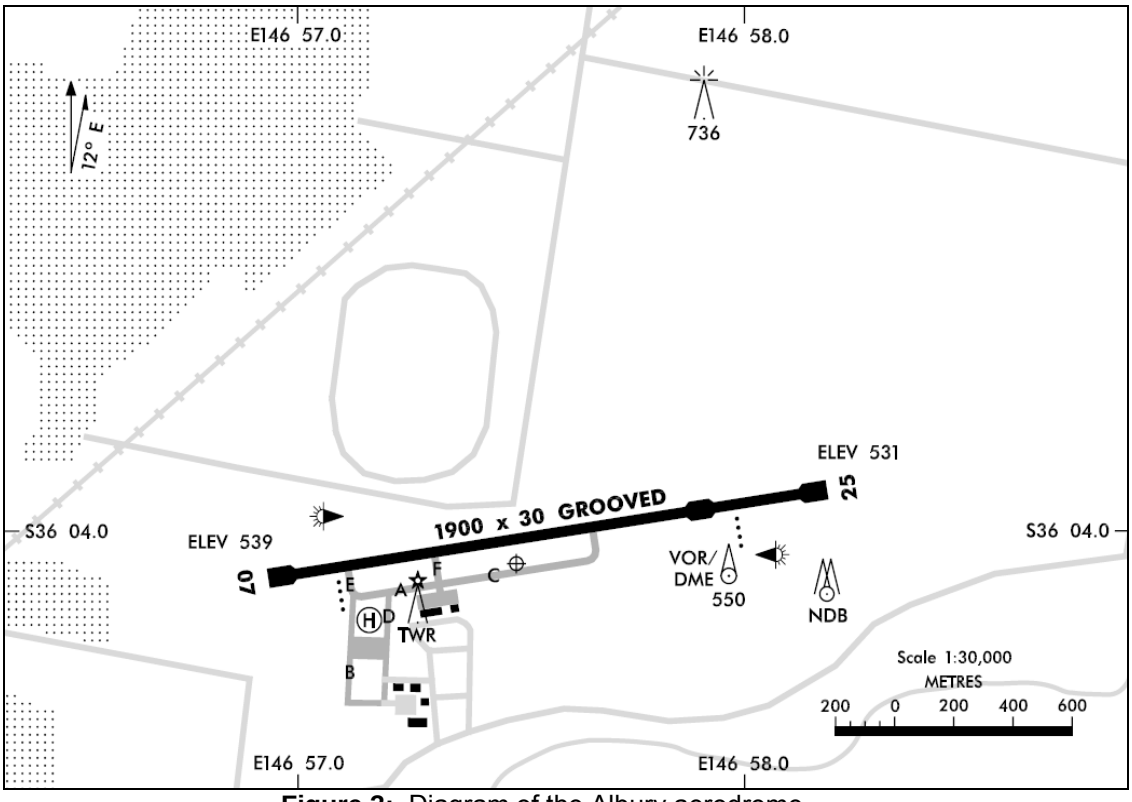


Figure 3: Diagram of the Albury aerodrome
(from the Departures and Approach Procedures (DAP) East, effective date 23 November 2006)

3.2 Aerodrome

3.2.1. Runways

Albury has one runway (designated as 07/25). It is 1,900 metres long, 30 metres wide and has a grooved, bitumen surface. The pavement strength is suitable for unrestricted operations by medium sized aircraft (Dash 8 and Embraer ERJ-170).

Aerodrome Pilot Activated Lighting (PAL) is available on the radio frequency 120.60 megaHertz (MHz). The PAL system activates the white runway lights; the blue taxiway lights and the white, flashing aerodrome beacon.

3.2.2. Aprons and Taxiways

Albury has one main apron, located in front of the terminal building and four secondary parking areas.

The aerodrome has a network of six taxiways (designated as Alpha; Bravo; Charlie; Delta; Echo and Foxtrot). Taxiway Foxtrot leads directly from the runway to the main terminal apron.

Turning nodes are provided at each threshold, and 400 metres from the Runway 25 threshold.

Four helipads are available and are located in the area between taxiways Alpha, Bravo and Delta.

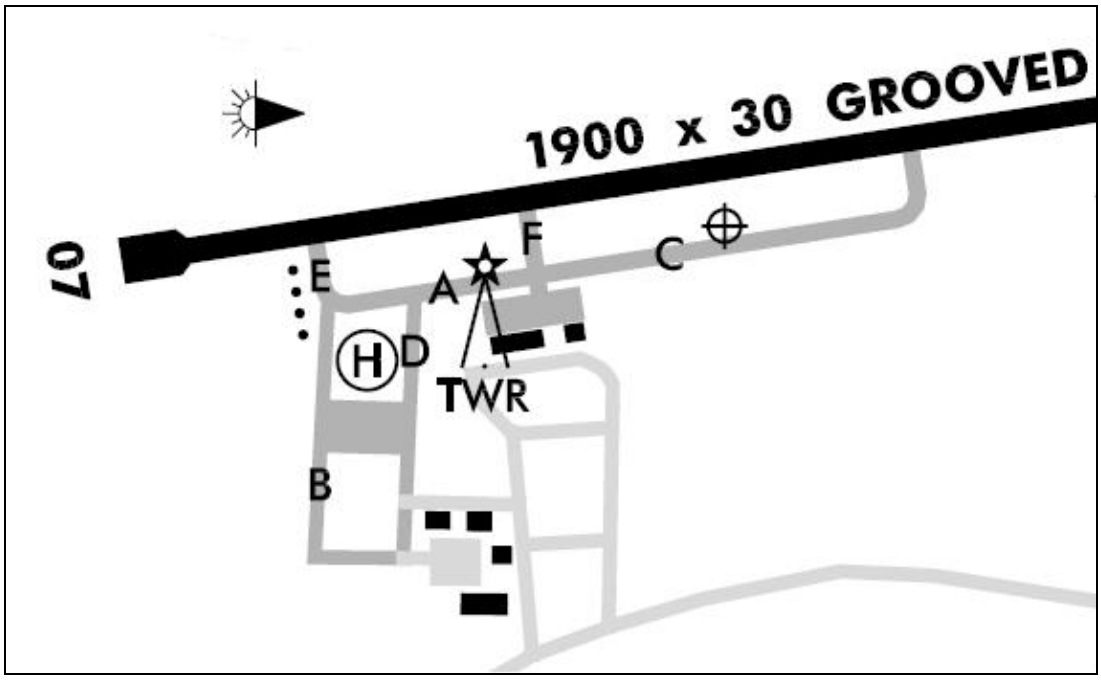


Figure 4: Diagram of the taxiway network at Albury aerodrome (from the DAP (East))

The taxiway network has a number of limitations. Taxiways Charlie and Delta are not available to aircraft above 5,700 kilograms (kg) Maximum Take Off Weight (MTOW).

The absence of a full length, parallel taxiway results in traffic entering and backtracking the runway prior to departure and to backtrack after landing. A Regular Passenger Transport (RPT) aircraft may occupy the runway for up to 4 minutes whilst it backtracks and prepares to take-off.

3.2.3. Automatic Weather Information Service

Current meteorological information can be obtained through the Automated Weather Information System (AWIS). The AWIS information can be acquired by telephoning the service on 02 6041 2962.

3.2.4. Navigational Aids

Albury is serviced by the following navigational aids (NavAids):

- A Non-Directional Beacon (NDB).
- A VHF Omni-Directional Radio Range (VOR).
- A Distance Measuring Equipment (DME) system.

All NavAids are located on the aerodrome, on the south eastern side of the runway.

3.2.5. Landing Aids

- Precision Approach Path Indicator (PAPI) on the southern side of Runway 07 and Runway 25.
- Aerodrome beacon located on the tower.
- Two illuminated Wind Direction Indicators (WDI), located on the left hand side of the runway, approximately 200 metres from each threshold.
- Pilot Activated Medium Intensity Runway Lights

3.2.6. Instrument Approaches

- Runway aligned, NDB and VOR approaches are published for runway 07.
- Runway aligned, NDB, VOR and Area Navigation (RNAV) Global Navigation Satellite System (GNSS) approaches are published for runway 25.
- Circling instrument approaches are also published for DME and Global Positioning System (GPS) arrivals.

3.2.7. Radio Communications / Facilities

The Albury control tower utilises the radio frequency of 124.2 MHz. The frequency is used outside tower hours to facilitate CTAF (R) procedures at the aerodrome.

The usual hours of operation of the Albury Tower are:

Mon – Fri: 0615 – 2030 local
Saturday: 0900 – 1700 local
Sunday: 1245 – 2030 local

Due to staffing issues, the tower is currently being staffed for a reduced period, Monday to Friday. The situation is expected to return to the usual hours after the end of June 2009. The reduced weekday hours are advertised via a Notice To Airmen (NOTAM). The current operating hours are:

Mon – Fri: 0815 – 1830 local

The air traffic services / flight information area frequency of 125.2 MHz can be received on the ground.

An Automatic Terminal Information Service (ATIS) is broadcast on the frequency 115.6 MHz.

3.2.8. Improvements / Developments

Passenger numbers are increasing at around 14% annually and Albury Council has embarked on a multi-million dollar, four-stage terminal upgrade.

The upgrade has included the installation of a contemporary baggage handling system and the introduction of increased security measures, which include walk-through metal detectors and explosive trace detection devices.

When complete, the new terminal will provide:

- Passenger facilities including a new check-in area
- Cafe
- Passenger lounge and toilet areas
- Outbound baggage handling system complete with Checked Baggage Screening (CBS) as per Federal Government requirements
- Departures security screening area
- Office facilities for terminal operations and airline staff
- Flight information display systems (FIDS)[2]

3.2.9. Local Traffic Regulations

Right hand circuits are required when operating on runway 07, except as directed by the air traffic controller.

4. Stakeholder Consultation

OAR representatives sought input from the aerodrome operator - Albury City Council, Airservices Australia (Airservices) and the passenger transport companies who operate in and around Albury aerodrome. Stakeholder interviews were conducted over the period of April and May 2009. A list of stakeholders who provided input is at Annex C.

4.1 Internal

CASA employs Aviation Safety Advisors (ASA) throughout Australia as an integral mechanism for providing safety promotion and educational material to the various industry segments. CASA Aviation Safety Advisors regularly visit Albury to liaise with local operators and discuss airspace issues. No adverse feedback has been received.

Consultation was conducted with CASA Flight Operations Inspectors (FOI) from the region.

4.2 Aerodrome Operator

The Albury aerodrome operations are managed by the Albury City Council. All background and aerodrome information within this report has been sourced via their webpage, and verified with the Aerodrome Manager.

The aerodrome operator has reported that there are currently no plans for major upgrade works to the runway or the taxiway network.

[2] Albury City Council website: http://www.alburycity.nsw.gov.au/www/html/362-building-a-better-airport.asp?intSiteID=1

4.3 Passenger Transport Services (PTS)

OAR representatives sought input from the Public Transport Service operators who operate in and around Albury aerodrome. Stakeholder interviews were conducted over the period of April and May 2009.

4.3.1 REGIONAL EXPRESS AIRLINES (REX)

Albury was reported as one of the better ports for REX. The Class D tower service, usually covers all REX flights in and out of Albury. The majority of the time the aerodrome works very well and it is very effective.

- An RNAV (GNSS) approach procedure for runway 07 should be introduced.

4.3.2 QANTASLINK AIRWAYS

The airline raised five concerns – three relate to Albury airspace, and one which affects their operations at a number of aerodromes (including Albury). The concerns raised were:

- The current holding pattern at the RNAV (GNSS) approach point "MAYEB" is not acceptable as it transitions from Class C to Class G. The published left-hand holding pattern takes the aircraft outside of controlled airspace (OCTA). Changing the holding pattern to a right-hand one, would not solve the problem as the tolerances applied to the RNAV/GNSS procedure would still mean that aircraft would possibly go OCTA.

- An ad-hock holding pattern at "MAYEC" after a flight from Mount Hotham (YHOT) also create a transition and re-entry Class G - Class C/D issue. This is seasonal in nature due to the weather at Mount Hotham during the winter months.

- Operators produce "special take-off procedures" to facilitate greater payload uplift. Crew conducting such a procedure may be required to position the aircraft such that it can not then meet the "on departure track by 5nm requirement". This requirement affects operations at a number of aerodromes.

- An RNAV (GNSS) approach procedure for runway 07 should be introduced.

- The installation of an Automated Weather Information System (AWIS) on the ATIS/VOR frequency, would provide crew with an actual QNH[3] when the tower is inactive, in turn permitting crew to use lower minima, improving our chances of 'getting in' from an instrument approach and reduce commercial disruption in bad weather. This is particularly important in winter, due to the effect of fog over this period; in terms of the AWIS and cost recovery, with the sharing of the cost amongst all operators, this would make it more feasible in the long term

4.3.3 BRINDABELLA AIRLINES

The airline is satisfied with the tower services provided at Albury, and do not have any problems with the aerodrome facilities or airspace steps.

[3] An altimeter subscale setting to obtain elevation or altitude.

The introduction of an AWIS that can be accessed via the radio would be beneficial to their operations. The AWIS service can be accessed during pre-flight operations (via telephone), but not once the aircraft is airborne and therefore it is not usable for landing data - i.e. cloud base, visibility, and deciding which is the most appropriate instrument approach.

Due to the recent reduction in the hours of operation of the tower, the first flight into and out of Albury occurs before the tower opens.

4.3.4 VIRGIN BLUE AIRLINES

The airline raised four concerns regarding the facilities and the airspace surrounding Albury. The concerns raised were:

- The transmission strength of the ATIS on the VOR is weak and crew often need to contact Albury Tower prior to descent to ask for the latest information. Operationally they require the information prior to commencing descent to ensure that briefings etc are completed; this reduces crew workload/error after the descent has been commenced. This is a distraction for both ATC and the crew;
- The installation of the AWIS on the ATIS/VOR (or a discrete) frequency.
- A full length parallel taxiway would be beneficial to operations. However, the airline is appreciative of the significant cost of additional infrastructure, and the costs involved may be prohibitive to the aerodrome operator. The airline may re-evaluate operations to Albury, if prices are increased to cover the cost of the new infrastructure.
- The current holding pattern at the RNAV (GNSS) approach point "MAYEB" is not acceptable as it causes aircraft to transition from Class C to Class G.
- An RNAV (GNSS) approach procedure for runway 07 should be introduced. This will enhance operations to Albury from Melbourne.

4.4 Military

The Military have no significant aviation activities at Albury.

4.5 Airservices Australia (Airservices)

- Airservices supports the recommendation of broadcasting the AWIS on a radio frequency.
- Airservices agrees to the concept of additional Class C airspace to protect the MAYEB holding pattern during tower hours, but has concerns in respect of the actual design.

4.6 Albury Tower staff

Feedback was received from the Airservices staff at Albury Tower. Issues raised included:

- The current holding pattern at the RNAV (GNSS) approach point "MAYEB" causes aircraft to transition from Class C to Class G and back again.

- Having a "Hot" co-ordination line between the en-route sectors and Albury Tower would enhance the efficiency of operations particularly with the regular Dash 8-400 and Embraer 170 jet operations. Airservices have "Hot" and "Cold" co-ordination lines. Currently between Albury and the en-route sectors it is Cold. The difference is a Cold co-ordination line requires the receiving sector to physically answer it, (similar to a telephone line). A Hot line is immediately open when the calling sector selects the line. The benefit is that any urgent or co-ordination requiring an immediate answer has no delay. In our normal course of operations if you receive a Cold line and a Hot line call at the same time the Cold will have to wait.

4.7 Discussion of issues raised by Stakeholders

4.7.1 AWIS broadcast on radio frequency

Following advice received from contractors, Jones Communications; the total cost of an installation is dependant on the amount of travel required and other factors such as the complexity of the physical location of the equipment and antenna. The actual hardware, licensing and documentation costs would be approximately $4,500 - $5,000 ex GST. Travel, accommodation and labour equates to approximately $3,500 - $4,500 ex GST.

Prior to the commencement of any work, close examination of the proposed antenna site, preferred equipment location and proximity to AWIS telephone interface box would need to be conducted. If the AWIS telephone interface box is not located within the same room proposed for the radio transmitter, the particular aerodrome will need to have screened CAT5E cable installed.

Careful consideration needs to be given to frequency allocation to minimize interference to existing services.

The provision of an AWIS broadcasting on a radio frequency is outside the scope of this report. This report and the suggestion for the AWIS frequency will be made to the aerodrome operator and Airservices Australia.

4.7.2 ATIS range

The broadcast range of an ATIS is usually 40 nm – 50 nm. The strength of the Albury ATIS transmission is outside the scope of this report. It is unlikely that an ATIS transmission range greater than 50 nm can be achieved.

4.7.3 Full length, parallel taxiway

The absence of a full length, parallel taxiway results in traffic entering and backtracking the runway prior to departure or after landing. The addition of the taxiway would be a major expense, and it is currently not planned by the Albury City Council.

4.7.4 RNAV /(GNSS) approach point

The holding pattern at the RNAV (GNSS) approach point "MAYEB", is not available during the hours of tower operation, due to the holding pattern taking aircraft from controlled airspace (Class C) into uncontrolled Class G airspace, then back into controlled airspace. Changing the holding pattern to a right-hand circuit does not solve the issue, as the aircraft will still exit and re-enter controlled airspace.

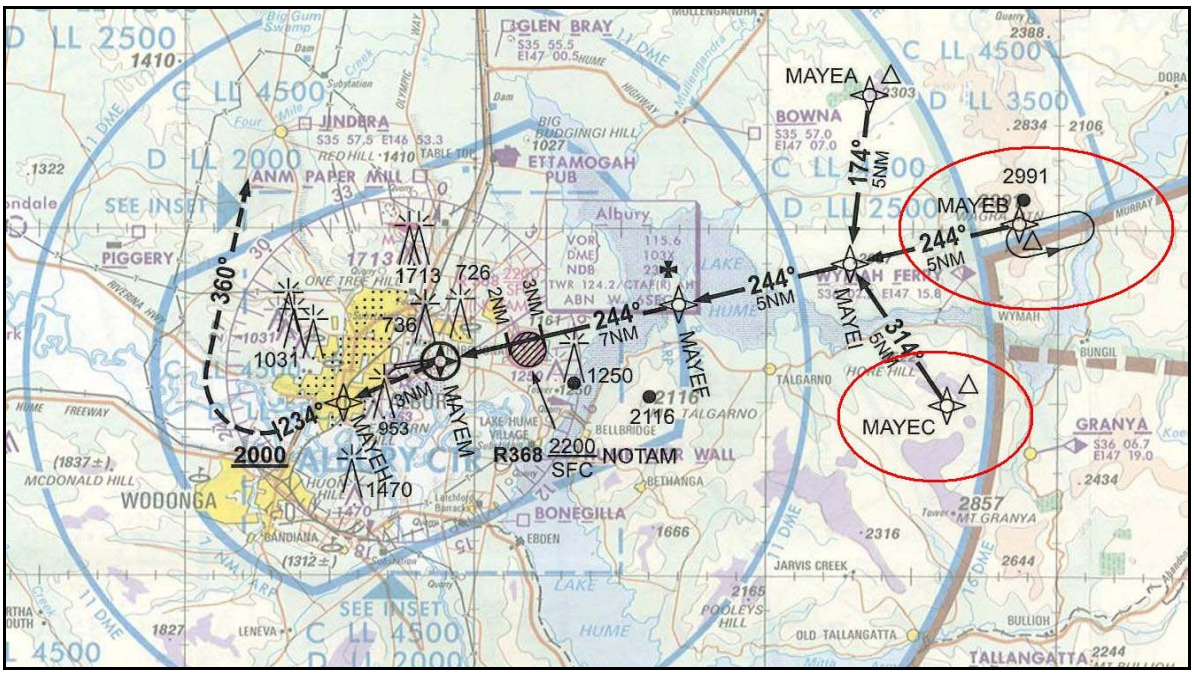


Figure 5: Albury VTC with an overlay of the RNAV/GNSS approach for runway 25, highlighting the locations for approach points MAYEB and MAYEC.

One solution would be to add a volume of Class C airspace, with a lower limit (LL) of 4,500 ft AMSL, which would cover the holding pattern and the required buffer area.

The additional airspace would start on the 16 DME arc at the Tallangatta Causeway. The Tallangatta Causeway is marked on the VTC and would be a reference point for pilots flying under the Visual Flight Rules (VFR). The airspace would continue to the 31 DME arc at 36°06'19"S, 147°36'07"E. The 31 DME arc would continue to the west to coordinate 35°33'50"S 147°06'30"E. The proposal moves north-eastern boundary would from 30 DME to 31 DME.

The addition of Class C airspace as described, will not encompass a holding pattern at MAYEC.

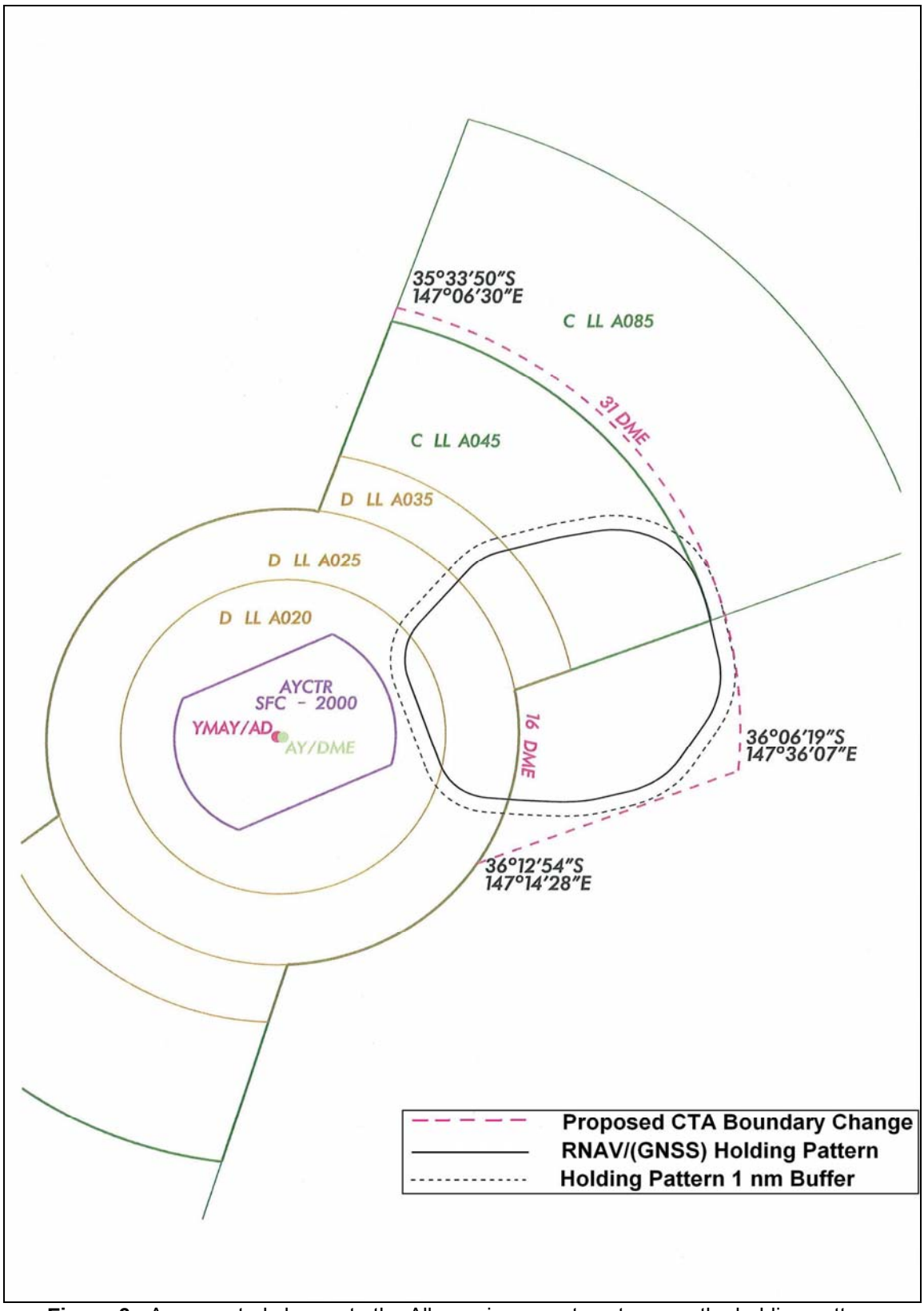


Figure 6: A suggested change to the Albury airspace steps to cover the holding pattern and buffer for the RNAV/GNSS approach for runway 25.

Diagram courtesy of Airservices Australia.

The OAR will submit an Airspace Change Proposal (ACP) to add the additional Class C airspace. The change to the airspace is considered to be minor in terms of impact to airspace users, however it will enhance safety and improve collision risk.

Extensive stakeholder consultation will be conducted as part of the ACP process.

5. Summary of Incidents and Accidents

5.1 Electronic Safety Incident Reports

Electronic Safety Incident Reports (ESIRs) are an electronically submitted air safety occurrence report, which forms part of the reporting system maintained by Airservices, which permits systemic analysis and trend monitoring.

During the period 1st April 2008 – 31st March 2009, 49 ESIRs were submitted to Airservices for the airspace surrounding Albury. Of the reported incidents, five groups are related to airspace issues:

Type of Incident	Number of Incidents
Violation of Controlled Airspace	14*
Failure to comply with ATS instructions or procedures	7**
AIRPROX (Close proximity event between two aircraft)	3
Runway Incursion	2
Loss of Separation Assurance	1***

Table 1: Breakdown of ESIRs at Albury (1st April 2008 – 31st March 2009)

***Note:** 15 "Violations of Controlled Airspace" reports were recorded which included one duplicate report (two entries).

***Note:** Nine "Failure to comply with ATS instructions" reports were recorded which included two duplicate reports (two entries each).

****Note:** Two "Loss of Separation Assurance" reports were recorded which included two duplicate reports (two entries each).

Duplicate ESIRs and ASIRs are generated when there is a second aircraft affected (with that aircrafts details) i.e. a Breakdown Of Separation.

23 of the 49 incidents relate to failure of the pilot to comply with instructions or procedures (Violation of Controlled Airspace/ Runway Incursion/ Failure to comply with ATS instructions or procedures). While this represented almost half of all of the incidents reported, it should be noted that 49 reported incidents equated to 0.16% of the total movements into Albury during the period.

Each incident has been investigated, or is currently being investigated by Airservices or CASA. In each case, the pilot in command will be contacted and educated regarding the correct procedures relating to the incident.

5.2 Air Safety Incident Reports

All accidents and incidents involving Australian registered aircraft, or foreign aircraft in Australian airspace must be reported to the Australian Transport Safety Bureau (ATSB). The ATSB maintains its own database (Occurrence Analysis and Safety Information System) in which all reports assessed by the ATSB as an accident, incident or serious incident are recorded. Each individual report is known as an Air Safety Incident Report (ASIR) and for identification purposes is allocated its own serial number.

During the period 1st April 2008 – 31st March 2009, 48 Aviation Safety Incident Reports (ASIRs) were submitted to the ATSB for the airspace surrounding Albury.

Type of Incident	Number of Incidents
Violation of Controlled Airspace	14
Failure to comply with ATS instructions or procedures	7*
AIRPROX (Close proximity event between two aircraft)	4
Runway Incursion	2
Loss of Separation Assurance	1**

Table 2: Breakdown of ASIRs at Albury (1st April 2008 – 31st March 2009)

***Note:** Nine "Failure to comply with ATS instructions" reports were recorded which included two duplicate reports (two entries each).

****Note:** Two "Loss of Separation Assurance" reports were recorded which included two duplicate reports (two entries each).

A summary of the ASIRs can be found in Annex G.

6. Modelling Methodology and Risk Assessment

6.1 Methodology Outline

CASA has developed 'acceptable risk' criteria with regards to the risk of midair conflicts within regional aerodrome terminal areas. The ARM, developed by CASA in 1996, is focused on a non-radar controlled terminal area model and no significant changes have been made since its development and presentation to the Review of the General Concept of Separation Panel (RGCSP), now the Separation and Airspace Safety Panel of the ICAO.

The OAR uses the Airspace Risk Model (ARM), a cause:consequence model, to calculate the probability of Mid-Air Collisions (MAC) in various airspace environments. The ARM and a FN-curve were developed by CASA and are the primary modelling tools utilised by the OAR.

This method is used to calculate benefits in terms of fatalities avoided by implementing safety measures. The ARM presumes that there is a 'Potential Conflict Pair', i.e. a pair of aircraft whose manoeuvres are such that if no intervening action is taken, the aircraft will reach a point where it will be too late to take evasive action and chance becomes the determining factor in whether the aircraft collide or not. This is called the Loss of Control point in this review.

The ARM model is based on the Linear Criterion concept which stipulates that the frequency of an accident should be inversely proportional to its severity, i.e. an accident involving one fatality may happen ten times as often as an accident involving ten fatalities.

Using the ARM, the existing scenario was modelled for Albury aerodrome – Class D Tower. Collision pairs for this review were calculated applying the CASA regression formula. It was established that this formula over estimates collision pairs therefore it is reasonable to assume that the real risk figures calculated for this review could be lower.

6.2 Airspace Risk Assessment

6.2.1. Assumptions

The operational environment referred to in the model is controlled non-radar, Class D terminal area. It has a radius of 15 nautical miles and extends to 5,000 ft above ground level.

6.2.2. Summary of Movement Data

A summary of aerodrome operator passenger movements is given in Table 3. Aircraft movement data and passenger movements in charter or private aircraft is not recorded by the airport operator. The total passenger numbers recorded by the aerodrome operator each year only represents those passengers that transit through the airport on RPT, this data being provided by the airlines on a monthly basis. Therefore the aerodrome operator passenger movement data is statistically very similar to the Bureau of Infrastructure, Transport and Regional Economics (BITRE) data recorded for the same periods.

Passenger movement data figures and passenger numbers for the past 5 years of operation have been confirmed through Albury City Council's Aerodrome Manager. These passenger movement figures are very similar to the figures reported by the BITRE, found at Annex F.

BITRE passenger movement and aircraft movement numbers summarised in Table 3 and 4 was sourced from their website[4], an extract of which can be found at Annex F. This data is similar to the aerodrome operator data in that it only captures passenger and aircraft movement numbers from scheduled RPT services at the subject airport. As with the aerodrome operator it is not thought that this data accurately takes into account private or charter passenger aircraft movements.

Airservices Australia data was sourced using their Aerodrome Research Application (ARA) tool. Detailed ARA data for the 12 months ending October 2008 can be found at Annex E.

The ARA data differs from the previously mentioned sources in that it involves a more comprehensive data gathering process that includes assessment and use of BITRE data. ARA data captures passenger and traffic movements involved in private and charter flights, plus includes circuit movements in the overall movement totals.

Data Source	Year 2003/04	Year 2004/05	Year 2005/06	Year 2006/07	Year 2007/08
Aerodrome Operator	158,586	188,225	199,623	215,678	249,161
% growth on previous year	21.74%	18.69%	6.06%	8.04%	15.52%
BITRE	158,489	184,607	198,020	212,264	247,144
% growth on previous year	21.11%	16.48%	7.27%	7.19%	16.43%
Airservices Australia	-	-	-	-	270,316

Table 3: Passenger numbers for Albury – previous 5 years.

[4] To view http://www.bitre.gov.au/publications/91/Files/Airport%20traffic%20tables%20Web.xls

Data Source	Year 2003/04	Year 2004/05	Year 2005/06	Year 2006/07	Year 2007/08
Aerodrome Operator	7,274	7,330	7,545	7,998	9,310
% growth on previous year	-	*0.77%*	*2.93%*	*6.00%*	*16.40%*
BITRE	8,597	8,301	8,688	8,917	8,906
% growth on previous year	*10.89%*	*-3.44%*	*4.66%*	*2.64%*	*-0.12%*
Airservices Australia	-	-	-	-	12,158

Table 4: Passenger Transport Service movements for Albury – previous 5 years.

Table 3 and Table 4 show clearly the increase in passenger numbers whilst the PTS movements remain steady. The average number of passengers per PTS movement has increased from approximately 18.3 in 2003/04 to 27.7 in 2007/08, indicating that the capacity of aircraft flying into Albury has increased.

For the purpose of this review the Airservices data set for the 12 months up to October 2008 has been used, as it has the highest value of air transport service movements inclusive of circuits.

6.2.3. Estimated Traffic Mix

A brief summary of the estimated traffic mix utilising Airservices data at Albury is shown in Table 5. The data differentiates between VFR flights and those conducted under Instrument Flight Rules (IFR).

Traffic Type	No of movements	% of movements
VFR Light	18,282	58.02%
IFR Light	5,719	18.15%
IFR Medium	5,108	16.21%
IFR Heavy	2,401	7.62%
Total	**31,509**	**100.00%**

Table 5: Traffic mix for Albury aerodrome

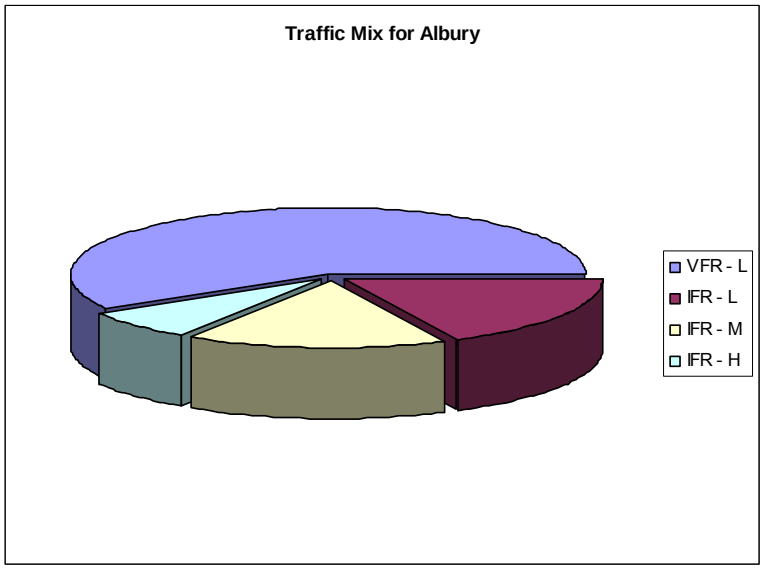


Figure 7: Graphical breakdown of traffic mix at Albury aerodrome

As can be seen from Table 5 and Figure 7 the majority of aircraft movements are by VFR aircraft with IFR light and medium aircraft.

6.2.4. Collision pairs were calculated applying the CASA collision formula

Conflict pairs were grouped into 16 categories and are listed in Table 6. Groupings differentiate between flights in Visual Meteorological Conditions (VMC) and flights within Instrument Meteorological Conditions (IMC).

Collision Types	Collision Pairs
VFR - VFR	227
IFR(L) - VFR	63
IFR(L) - IFR(L) in VMC	18
IFR(L) - IFR(L) in IMC	4
IFR (M) - VFR	56
IFR(M) - IFR(L) in VMC	14
IFR(M) - IFR(L) in IMC	4
IFR(M) -IFR(M) in VMC	14
IFR(M) -IFR(M) in IMC	4
IFR(H) - VFR	26
IFR(H) - IFR(L) in VMC	7
IFR(H) - IFR(L) in IMC	2
IFR(H) - IFR(M) in VMC	6
IFR(H) - IFR(M) in IMC	1
IFR(H) - IFR(H) in VMC	3
IFR(H) - IFR(H) in IMC	1
Total	**450**

Table 6: Estimated collision pairs for Albury Aerodrome

VFR including gliders and helicopters
IFR (L) = IFR Light - less than 10 passengers
IFR (M) = IFR Medium - 10 to 38 passengers
IFR (H) = IFR High - more than 38 passengers

The conflict pairs were grouped in proportion to traffic and in addition the following assumptions were made:

- Factor up like pairs by 1½
- Factor down unlike pairs by ⅔
- IFR-IFR pairs are 80% in VMC and 20% in IMC
- In total, 450 collision pairs were estimated.

6.2.5. Evaluation of Airspace Models and Data Analysis Results

Annualised total traffic movement data was applied to the ARM developed by CASA. The results are shown in Figure 8 – Risk Model.

The following scenarios were considered for Albury:

- Class G airspace with CTAF (R) procedures (pink line)
- Class D Tower (blue line)

The blue line represents a Class D tower service for Albury. This line is well below the scrutiny line and it is reasonable to assume that if all services applicable to a Class D tower are in place, that Albury can be considered to be as low as reasonably practicable (ALARP). Therefore the risks associated with Albury are tolerable.

The scenario represented by the pink line indicates that the risk associated with CTAF (R) is close to the scrutiny line. This scenario assumed that CTAF (R) procedures are in place 24 hours a day. CTAF (R) procedures are therefore not sufficient as a baseline for Albury to ensure the risk is ALARP.

It should be noted that CTAF (R) procedures are in place at Albury during periods of reduced activity (between 8.30pm and 6.15am local time). During periods of decreased activity, the CTAF (R) procedures offer adequate safety mitigation measures for the aerodrome.

The modelling results estimate that with a Class D tower service approximately, **0.00897** fatalities per annum can be expected. In addition, it is estimated that Albury has a likelihood of having one midair collision approximately every 2,664 years with an estimate of 24 fatalities.

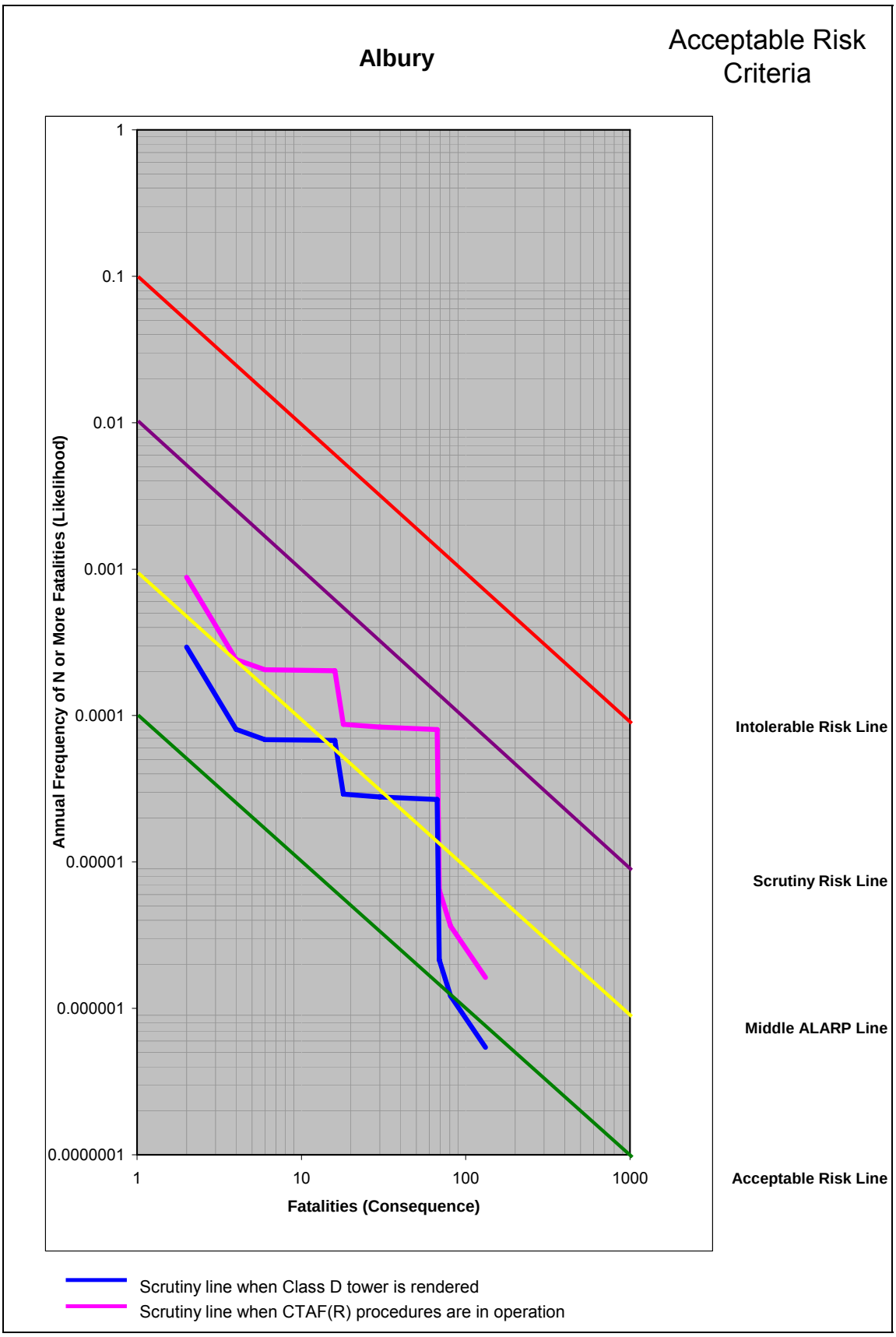


Figure 8: Results of the Airspace Risk Model for Albury

Note: The Scrutiny Line for CTAF(R) procedures depicted in Figure 8 assumes that CTAF (R) procedures are in place 24 hours a day.

7. Findings

7.1 Feedback from the RPT stakeholders was positive toward the facilities and airspace architecture.

7.2 The application of the Airspace Risk Model (ARM) revealed that the current situation lies close to the 'as low as reasonably practicable' (ALARP) region and that Class D airspace (and CTAF (R) procedures outside Tower hours), should be the minimum service level maintained at the Albury aerodrome.

7.3 The current holding pattern at the RNAV (GNSS) approach point "MAYEB" is not acceptable as it transitions from Class C to Class G. A 'work-around' of conducting a right hand holding pattern does not contain the procedure within controlled airspace.

7.4 Having an AWIS that is broadcast on a radio frequency would be beneficial to the operators.

7.5 The ATIS broadcast is unable to be received by some RPT operators prior to commencing descent.

7.6 An RNAV(GNSS) approach for Runway 07 would be beneficial for Passenger Transport operators.

7.7 Having a "Hot" co-ordination line between the en-route sectors and Albury Tower would enhance the efficiency of operations.

8. Recommendations

The report makes the following four recommendations:

1. An Airspace Change Proposal (ACP) be submitted to change the Class C airspace to the North East of Albury to encapsulate the holding pattern at the RNAV (GNSS) approach point "MAYEB", including the required holding pattern and buffer.

2. The aerodrome operator investigate the feasibility of broadcasting the AWIS on a radio frequency.

3. Airservices Australia investigate the feasibility of developing an RNAV (GNSS) approach for runway 07.

4. Airservices Australia investigate the feasibility of installing a "Hot" co-ordination line between the en-route sectors and Albury Tower.

9. Next step

9.1 An Airspace Change Proposal (ACP) be submitted to change the Class C airspace to the North East of Albury to encapsulate the holding pattern at the RNAV (GNSS) approach point "MAYEB".

9.2 A quote and other details for broadcasting the AWIS on a radio frequency be forwarded to the aerodrome operator for consideration.

9.3 A formal request be put to Airservices Australia to undertake a feasibility study to provide an RNAV (GNSS) approach for runway 07.

9.4 A formal request be put to Airservices Australia to undertake a feasibility study to provide a “Hot” co-ordination line between en-route sectors and Albury Tower.

9.5 The OAR will maintain a watch of activity at Albury aerodrome during the bi-annual review of movement data, and, if total aircraft movements significantly increase, or after five years, whichever occurs first, an aeronautical study should be conducted to reassess the risk to passenger transport operations.

Annexes:

A. Acronyms
B. Australian Airspace Structure
C. Stakeholders
D. Aerodrome Operator Data
E. Airspace Research Application (ARA) Data
F. Bureau of Infrastructure Transport and Regional Economics (BITRE) Data
G. Australian Transport Safety Bureau (ATSB) Data

Annex A – Acronyms

AAPS	Australian Airspace Policy Statement, 28 June 2007
ACP	Airspace Change Proposal
Act	*Australian Airspace Act 2007*
AGL	Above Ground Level
AIP	Aeronautical Information Publication
AIRPROX	Close proximity event between two aircraft
Airservices	Airservices Australia
ALARP	As Low As Reasonably Practicable
AMSL	Above Mean Sea Level (in feet)
ARA	Airspace Research Application
ARM	Airspace Risk Model
ASA	Aviation Safety Advisor (CASA)
ASIR	Aviation Safety Incident Report
ATC	Air Traffic Control
ATIS	Aerodrome Terminal Information Service
ATS	Air Traffic Services
ATSB	Australian Transport Safety Bureau
AWIS	Automatic Weather Information Service
BITRE	Bureau of Infrastructure, Transport and Regional Economics (Department)
CAR	Civil Aviation Regulations 1988
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations 1998
CBS	Checked Baggage Screening
CHTR	Charter
CTAF	Common Traffic Advisory Frequency
CTAF(R)	Common Traffic Advisory Frequency (Radio Required)
CTA	Controlled Airspace
CTR	Control Zone
DA	Danger Area
DAH	Designated Airspace Handbook (AIP)
DAP	Departure and Approach Procedures (AIP)
DCEO	Deputy Chief Executive Officer
Defence	Department of Defence
Department	Department of Infrastructure, Transport, Regional Development and Local Government
DME	Distance Measuring Equipment
ERSA	En Route Supplement of Australia
ESIR	Electronic Safety Incident Report
FIDS	Flight Information Display System
FIR	Flight Information Region
FIS	Flight Information Service
FL	Flight Level
FN Curve	Frequency / Severity Risk Curve
FOI	Flying Operations Inspector
ft	feet
GA	General Aviation
GAAP	General Aviation Aerodrome Procedures
GGM	Group General Manager
GNSS	Global Navigation Satellite System (Navigational Aid)

GPS	Global Positioning System
IAS	Indicated Air Speed
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
IFR (H)	IFR Heavy - more than 38 passengers
IFR (L)	IFR Light - less than 10 passengers
IFR (M)	IFR Medium - 10 to 38 passengers
IMC	Instrument Meteorological Conditions
kg	kilograms
kts	knots (nautical miles per hour)
LL	Lower Limit
MAC	Mid-Air Collision
MBZ	Mandatory Broadcast Zone
MHz	megaHertz
MOS	Manual of Standards
MTOW	Maximum Take Off Weight
NavAid	Navigational Aid
NDB	Non-Directional Beacon (Navigational Aid)
nm	nautical miles
NOTAM	Notice to Airmen
NSW	New South Wales
OAR	Office of Airspace Regulation (CASA)
OCTA	Outside of Controlled Airspace
PA	Prohibited Area
PAL	Pilot Activated Lighting
PAPI	Precision Approach Path Indicator
PT	Passenger Transport
PTS	Passenger Transport Service
QNH	An altimeter subscale setting to obtain elevation or altitude
R/T	Radio Telephony
RA	Restricted Area
REX	Regional Express Airlines
RGCSP	Review of the General Concept of Separation Panel
RIS	Radar Information Service
RNAV	Area Navigation
RPT	Regular Public Transport
RWY	Runway
SAR	Search and Rescue
SFC	Surface
SVFR	Special Visual Flight Rules
TWR	Tower
VFR	Visual Flight Rules
VHF	Very High Frequency (radio)
VIS	Visibility
VMC	Visual Meteorological Conditions
VOR	Very High Frequency (VHF) Omni-directional Radio Range
VTC	Visual Terminal Chart (AIP)
WDI	Wind Direction Indicator

Annex B – Australian Airspace Structure

Class	Description	Services/Procedures/Rules
A	All airspace above Fight Level 180 (East Coast) or FL245	IFR only, all separated by Air Traffic Control (ATC), no speed limitation, continuous two-way radio required. Clearance required from ATC to enter airspace.
B	Not currently used in Australia	
C	In control zones (CTRs) of defined dimensions and control area steps associated with controlled aerodromes	IFR separated from IFR, VFR and Special VFR (SVFR) by ATC, no speed limitation for IFR operations, continuous two-way radio required. Clearance required from ATC to enter airspace. VFR receives traffic information on other VFR but not separated from each other by ATC. Speed limited to 250knots (kts) Indicated Air Speed (IAS) below 10,000ft AMSL*, continuous two-way radio required. Clearance required from ATC to enter airspace. Special VFR separated from Special VFR when visibility (VIS) is less than VMC. Speed limited to 250kts IAS below 10,000ft AMSL**, continuous two-way radio required. Clearance required from ATC to enter airspace. Transponder required within radar coverage.
D	Regional locations such as Hobart and Alice Springs	IFR separated from IFR and Special VFR. Traffic information provided on all VFR. Speed limited to 250kts IAS below 10,000ft AMSL**, continuous two-way radio required. Clearance required from ATC to enter airspace. VFR receives traffic on all other aircraft but not separated by ATC. Speed limited to 250kts IAS below 10,000ft AMSL**, continuous two-way radio required. Clearance required from ATC to enter airspace. Special VFR separated from Special VFR when VIS is less than VMC. Speed limited to 250kts IAS below 10,000ft AMSL**, continuous two-way radio required. Clearance required from ATC to enter airspace.
D (GAAP)	High density General Aviation aerodromes	**GAAP:** • In VMC all operations are VFR, traffic information only. Speed limited to 250kts IAS, continuous two-way radio required. Clearance required from ATC to enter airspace. • In IMC, IFR separated from all traffic. Speed limited to 250kts IAS, continuous two-way radio required. Clearance required from ATC to enter airspace. • Special VFR separated from Special VFR when VIS is less than VMC. Speed limited to 250kts IAS, continuous two-way radio required. Clearance required from ATC to enter airspace.
E	Controlled airspace not covered in classifications above (above 8,500ft or FL180)	IFR separated from IFR by ATC, traffic information on known VFR. Speed limited to 250kts IAS below 10,000ft AMSL**, continuous two-way radio required. Clearance required from ATC to enter airspace. VFR provided with Flight Information Service (FIS), search and rescue (SAR), weather update service, on request, within radar coverage and workload permitting. Speed limited to 250kts IAS below 10,000ft AMSL**, continuous two-way radio required. Clearance from ATC to enter airspace not required. Transponder required for VFR aircraft with continuous electrical power
F	Not currently used in Australia	
G	Non-controlled	IFR receives FIS on IFR and known VFR traffic. Speed limited to 250kts IAS below 10,000ft AMSL**, continuous two-way radio required. Clearance from ATC to enter airspace not required. VFR provided with FIS, SAR, weather update service and Radar Information Service (RIS) subject to availability. Speed limited to 250kts IAS below 10,000ft AMSL**. Clearance to enter airspace from ATC not required. VHF radio required above 5,000ft AMSL and at aerodromes where carriage and use of radio is required. VHF radio for operations in VMC.

* Not applicable to military aircraft

Annex C – Stakeholder input provided by:

Position	Organisation
Aerodrome Manager	Albury City Council (Aerodrome Operator)
Group Safety Manager	Regional Express Airlines (REX)
Chief Pilot	Brindabella Airlines
E-Jet Fleet Standards Manager	Virgin Blue Airlines
Deputy Chief Pilot	QantasLink Airways
Senior Defence Advisor	Department of Defence
General Manager Safety and Environment	Airservices Australia
Information and Co-ordination Officer	Australian Transport Safety Bureau
Manager	Jones Communications
Aviation Safety Advisor (ASA)	Deputy Chief Executive Officer (DCEO) Operations, CASA
Flying Operations Inspector (FOI)	General Aviation Operations Group (GAOG), CASA
Aerodrome Inspector (AI)	Airspace and Aerodrome Regulation Group (AARG), CASA
Air Transport Inspector (ATI)	Air Transport Group (ATOG), CASA

Annex D – Aerodrome Operator Data

	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
July	12,636	11,620	11,122	11,807	17,059	17,133	17,867	19,604	27,414
August	14,958	12,872	11,726	13,048	15,796	18,192	19,700	21,892	25,659
September	17,959	5,573	10,876	12,189	19,368	18,361	18,905	19,745	24,100
October	13,447	8,194	11,466	12,936	15,122	16,698	18,422	19,101	24,460
November	14,179	9,084	11,366	13,014	14,799	16,698	18,570	18,834	25,348
December	14,308	7,944	9,802	11,944	15,374	15,094	16,394	19,341	21,422
January	11,430	6,625	7,457	10,513	11,427	13,749	13,808	15,244	20,651
February	12,096	9,472	10,759	13,559	14,037	14,978	16,073	22,363	20,698
March	15,340	10,949	11,802	13,646	15,790	18,194	20,241	22,209	24,883
April	12,208	9,816	11,360	16,896	17,442	16,168	16,420	23,286	23,863
May	12,630	10,739	11,398	14,464	14,528	18,013	19,542	24,769	-
June	13,543	10,710	11,133	14,570	17,483	16,345	19,736	22,773	-
Total	**164,734**	**113,598**	**130,267**	**158,586**	**188,225**	**199,623**	**215,678**	**249,161**	238,498*

Passenger numbers - 2000/2001 – April 2009

*Data for May and June 2009 was not available at the time of the report.

Year	Weight Over 7,000 KG	Weight Under 7,000 KG	Total Movements
2000/2001	**10,942**	**20,842**	**31,784**
2001/2002	**7,856**	**20,466**	**28,322**
2002/2003	**8,810**	**21,130**	**29,940**
2003/2004	**7,274**	**22,558**	**29,832**
2004/2005	**7,330**	**21,888**	**29,218**
2005/2006	**7,545**	**21,206**	**28,751**
2006/2007	**7,998**	**19,294**	**27,292**
2007/2008	**9,310**	**18,686**	**27,996**

Fixed wing aircraft movements - 2000/2001 – 2007 / 2008

Annex E – ARA Data

AIRSERVICES AUSTRALIA

Data Validation Report

Movements

ALBURY (NSW) - YMAY
Twelve months ending October 2008

VFR Source Data	VFR Movements Factor	VFR Movements Manual Override	VFR ATM Factor	VFR ATM Manual Override	VFR Passenger Factor	VFR Passenger Manual Override
Towered	2		0.1		3	

Flight Type		Transaction Source: IFR	VFR Towered	Total Movements
GENERAL AVIATION	Arrival Count	892	4,240	**5,132**
	Departure Count	881	4,240	**5,121**
	Circuit Count	0	9,236	**9,236**
MILITARY	Arrival Count	147	19	**166**
	Departure Count	109	19	**128**
	Circuit Count	0	0	**0**
NON-SCHEDULED	Arrival Count	1,051	8	**1,059**
	Departure Count	1,018	8	**1,026**
	Circuit Count	0	0	**0**
SCHEDULED	Arrival Count	4,817	3	**4,820**
	Departure Count	4,818	3	**4,821**
	Circuit Count	0	0	**0**
Sum of Arrival Count		**6,907**	**4,270**	**11,177**
Sum of Departure Count		**6,826**	**4,270**	**11,096**
Sum of Circuit Count		**0**	**9,236**	**9,236**
Total Movements as per count		**13,733**	**17,776**	**31,509**

a	If VFR_Manual_Entry <> zero use it, enter zero in item b.	
b	If VFR data source is Untowered, then multiply IFR Total by VFR Movement Factor.	
c	Enter total in table above	
d	Add items (a) – (c) to determine Total Movements for port. Note: Round Total movements where source not Towered or Avdata to nearest 100	

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AIRSERVICES AUSTRALIA

Data Validation Report

Air Transport Movements

ALBURY (NSW) - YMAY
Twelve months ending October 2008

VFR Source Data	VFR Movements Factor	VFR Movements Manual Override	VFR ATM Factor	VFR ATM Manual Override	VFR Passenger Factor	VFR Passenger Manual Override
Towered	2		0.1		3	

Flight Type		Transaction Source: IFR	VFR Towered	Total ATM
GENERAL AVIATION	ATM Arrival Count	614	775	**1,389**
	ATM Departure Count	604	775	**1,379**
MILITARY	ATM Arrival Count	0	0	**0**
	ATM Departure Count	0	0	**0**
NON-SCHEDULED	ATM Arrival Count	1,031	6	**1,037**
	ATM Departure Count	998	6	**1,004**
SCHEDULED	ATM Arrival Count	3,669	0	**3,669**
	ATM Departure Count	3,680	0	**3,680**
Sum of ATM arrival		**5,314**	**781**	**6,095**
Sum of ATM Departure		**5,282**	**781**	**6,063**
Total ATM as per count		**10,596**	**1,562**	**12,158**

a	If Air_Transport_VFR_Manual_Entry <> zero use it, enter zero in item b.	
b	If VFR data source is Untowered, then multiply Total IFR Air Transport Movements by VFR_Air_Transport_Factor.	
c	Enter total in table above	
d	Add items (a) – (c) to determine Total Air Transport Movements for port. Note: Round Total Air Transport Movements where source not Towered or Avdata to nearest 100	

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AIRSERVICES AUSTRALIA

AIRSERVICES AUSTRALIA

Data Validation Report

Passenger Figures

ALBURY (NSW) - YMAY
Twelve months ending October 2008

VFR Source Data	VFR Movements Factor	VFR Movements Manual Override	VFR ATM Factor	VFR ATM Manual Override	VFR Passenger Factor	VFR Passenger Manual Override
Towered	2		0.1		3	

Flight Type		Transaction Source: IFR	VFR Towered	Total Passenger Figures
GENERAL AVIATION	Passenger Arrival Count	2,980	3,121	**6,101**
	Passenger Depature Count	2,857	3,121	**5,978**
MILITARY	Passenger Arrival Count	0	0	**0**
	Passenger Depature Count	0	0	**0**
NON-SCHEDULED	Passenger Arrival Count	4,287	18	**4,305**
	Passenger Depature Count	4,135	18	**4,153**
Sum of Passenger Arrival		**7,267**	**3,139**	**10,406**
Sum of Passenger Departure		**6,992**	**3,139**	**10,131**
Total Passenger as per count		**14,259**	**6,278**	**20,537**
DOTARS Passenger count Disp		270,316	0	**270,316**

	IFR	VFR Towered	Total IFR Pax
ORS IFR Arr Sched Pax	0	0	**0**
ORS IFR Dep Sched Pax	0	0	**0**
Total(ORS IFR Arr Sched Pax)	**0**	**0**	**0**

a	If VFR Passenger Manual Entry <> zero use it, enter zero in item b	
b	If VFR data source is Untowered, then multiply figure obtained in 2(b) above by VFR Passenger Factor.	
c	If DOTARS figure <> zero enter the DOTARS figure	
d	If DOTARS figure = zero, enter the scheduled passenger count	
e	Enter total in table above (non-scheduled passenger count)	
f	Add items (a) – (e) to determine Total Air Transport Movements for port. Note: Round result where source not Towered or Avdata to nearest 100	

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Annex F – BITRE Data

REPORT PERIOD: 1997-98 to 2007-08

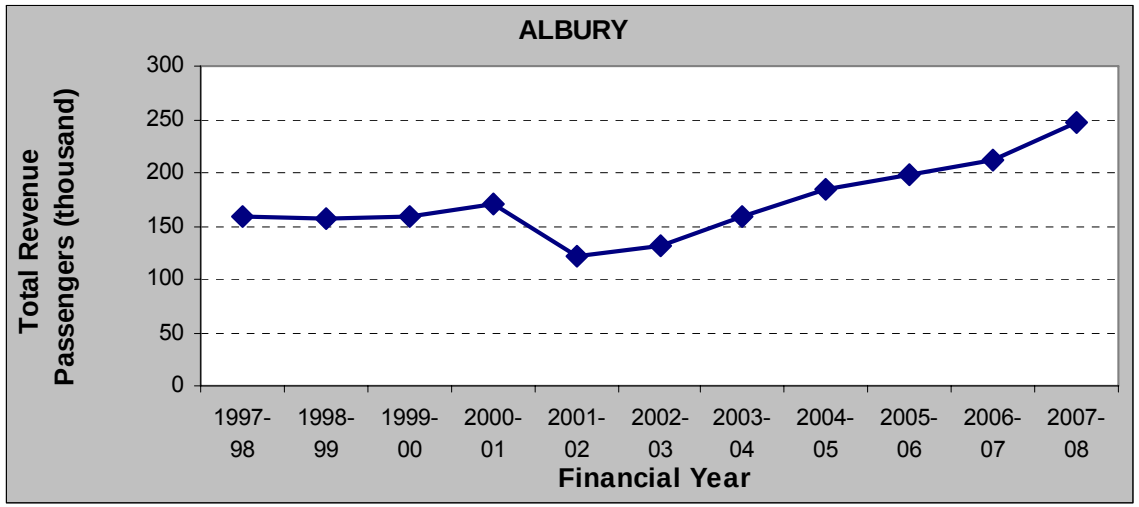
Regular Public Transport (RPT) operations only

AIRPORT TRAFFIC STATISTICS - TRAFFIC ON BOARD BY STAGES FOR DOMESTIC, and UPLIFT/DISCHARGE DATA FOR INTERNATIONAL & REGIONAL.

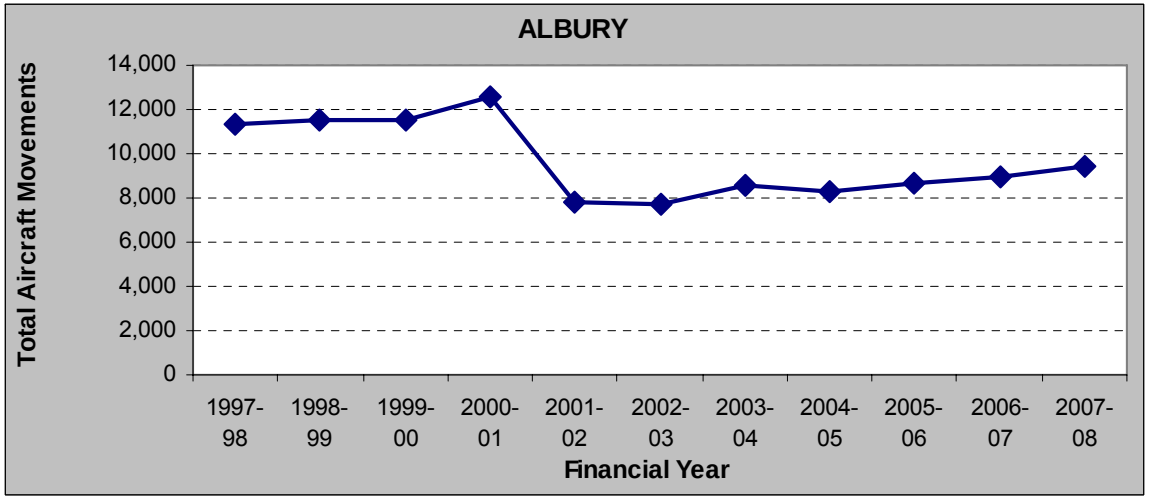
		DOMESTIC Revenue Passengers			REGIONAL Revenue Passengers			INTERNATIONAL Revenue Passengers			TOTAL PASSENGERS Revenue Passengers		
AIRPORT	Year	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
ALBURY	1997-98	0	0	0	79,392	79,230	158,622	0	0	0	79,392	79,230	158,622
ALBURY	1998-99	0	0	0	78,290	78,422	156,712	0	0	0	78,290	78,422	156,712
ALBURY	1999-00	0	0	0	79,687	79,876	159,563	0	0	0	79,687	79,876	159,563
ALBURY	2000-01	0	0	0	85,382	84,841	170,223	0	0	0	85,382	84,841	170,223
ALBURY	2001-02	0	0	0	61,790	60,703	122,493	0	0	0	61,790	60,703	122,493
ALBURY	2002-03	0	0	0	65,459	65,406	130,865	0	0	0	65,459	65,406	130,865
ALBURY	2003-04	0	0	0	79,158	79,331	158,489	0	0	0	79,158	79,331	158,489
ALBURY	2004-05	0	0	0	92,316	92,291	184,607	0	0	0	92,316	92,291	184,607
ALBURY	2005-06	0	0	0	98,878	99,142	198,020	0	0	0	98,878	99,142	198,020
ALBURY	2006-07	0	0	0	105,640	106,624	212,264	0	0	0	105,640	106,624	212,264
ALBURY	2007-08	13,556	13,566	27,122	109,768	110,254	220,022	0	0	0	123,324	123,820	247,144

		DOMESTIC Aircraft Movements			REGIONAL Aircraft Movements			INTERNATIONAL Aircraft Movements			TOTAL MOVEMENTS Aircraft Movements		
AIRPORT	Year	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
ALBURY	1997-98	0	0	0	5,645	5,661	11,306	0	0	0	5,645	5,661	11,306
ALBURY	1998-99	0	0	0	5,739	5,745	11,484	0	0	0	5,739	5,745	11,484
ALBURY	1999-00	0	0	0	5,781	5,783	11,564	0	0	0	5,781	5,783	11,564
ALBURY	2000-01	0	0	0	6,298	6,306	12,604	0	0	0	6,298	6,306	12,604
ALBURY	2001-02	0	0	0	3,928	3,918	7,846	0	0	0	3,928	3,918	7,846
ALBURY	2002-03	0	0	0	3,881	3,872	7,753	0	0	0	3,881	3,872	7,753
ALBURY	2003-04	0	0	0	4,300	4,297	8,597	0	0	0	4,300	4,297	8,597
ALBURY	2004-05	0	0	0	4,149	4,152	8,301	0	0	0	4,149	4,152	8,301
ALBURY	2005-06	0	0	0	4,344	4,344	8,688	0	0	0	4,344	4,344	8,688
ALBURY	2006-07	0	0	0	4,458	4,459	8,917	0	0	0	4,458	4,459	8,917
ALBURY	2007-08	275	275	550	4,456	4,450	8,906	0	0	0	4,731	4,725	9,456

Annex F – BITRE Data (Continued)



Passenger numbers 1997 - 2008



Air Transport movements 1997 - 2008

Annex G – ATSB Data

ATSB Reference Number	Occurrence Date	Airspace Type	Airspace Class	Aircraft Model	ATSB Summary	Incident Type
200800026	08-Jan-08	CTR	D	B200	The pilot commenced the take-off run without a clearance.	Failure to comply with ATS
200800351	20-Jan-08	CTR	D	340B	During the take-off run, the aircraft struck a hawk that impacted the right engine intake.	Birdstrike
200800412	21-Jan-08	CTR	D	310R	During the landing roll, the aircraft struck an eagle that impacted the left engine nacelle.	Birdstrike
200800947	15-Feb-08	CTR	D	340B	On touchdown, the aircraft struck a bird.	Birdstrike
200800943	15-Feb-08	CTR	D	182T	The aircraft entered the CTR without a clearance.	Violation of Controlled Airspace
200801344	27-Feb-08	CTAF (R)	G	B200	After becoming airborne the pilot notified ATS that the aircraft had a problem with one of its propellers. The pilot carried out a circuit and landed safely.	Emergency
200801295	28-Feb-08	CTA	C	DHC-8-315	While outbound on the 043 radial and assigned 7,000 ft, the Dash 8 was observed by ATC to climb above the assigned altitude and the crew reported on climb to 8,000 ft. A SAAB 340 inbound on descent on the 060 radial had been assigned 8,000 ft and was subsequently re cleared to 9,000 ft. ATC reported a loss of separation assurance.	LOSS OF SEPARATION ASSURANCE
200801268	28-Feb-08	CTA	C	182Q	A breakdown of lateral separation occurred between a Cessna 182 tracking northwest of the Hume highway and a de Havilland DHC-8 tracking outbound from Albury on the 043 radial. The two tracks conflicted under 16 NM from Albury. The aircraft came within 3 NM of each other.	LOSS OF SEPARATION ASSURANCE
200801268	28-Feb-08	CTA	C	DHC-8-315	A breakdown of lateral separation occurred between a Cessna 182 tracking northwest of the Hume highway and a de Havilland DHC-8 tracking outbound from Albury on the 043 radial. The two tracks conflicted under 16 NM from Albury. The aircraft came within 3 NM of each other.	LOSS OF SEPARATION ASSURANCE
200801350	29-Feb-08	CTR	D	340B	During the take-off run, the aircraft struck a bird.	Birdstrike

200801798	19-Mar-08	CTR	D	Unknown	The pilot of an aircraft landing on runway 07 reported sighting bird remains on the runway.	Birdstrike
200803287	13-May-08	CTA	C	AS.350B3	The helicopter was observed to have entered controlled airspace without a clearance.	Violation of Controlled Airspace
200803727	04-Jun-08	CTR	D	340B	During the landing roll on runway 25, the aircraft struck a plover.	Birdstrike
200804006	14-Jun-08	OCTA	G	PA-38-112	During the approach, the engine began to run roughly.	Emergency
200804178	15-Jun-08	CTA	C	PA-28R-201T	The pilot did not track in accordance with the planned and cleared route.	Failure to comply with ATS
200804170	24-Jun-08	CTR	D	PA-28-161	While taxiing after landing, the aircraft entered runway 25 without a clearance.	Failure to comply with ATS
200804131	25-Jun-08	CTR	D	ERJ 170-100 LR	During the landing roll on runway 25, the aircraft struck a hawk that impacted the nose.	Birdstrike
200804329	01-Jul-08	CTR	D	DHC-8-315	During the landing roll on runway 25, the aircraft struck a plover that impacted the left propeller.	Birdstrike
200804204	02-Jul-08	CTR	D	414A	The pilot had been issued the RWY 25 VOR approach. The pilot did not comply with the tracking requirement as specified in the procedure.	Failure to comply with ATS
200804544	13-Jul-08	CTR	D	PA-28-161	The pilot did not comply with the taxi clearance and the aircraft was subsequently observed by ATC to have entered runway 07 without a clearance.	Failure to comply with ATS
200805760	04-Sep-08	CTA	C	Unknown	An unidentified aircraft was observed by ATC to have entered controlled airspace without a clearance.	Violation of Controlled Airspace
200805869	10-Sep-08	CTAF (R)	G	560	The DOOKIE sector controller did not coordinate the aircraft's departure to the BENALLA sector controller.	BREAK DOWN OF COORDINATION
200806051	16-Sep-08	CTA	D	172S	The aircraft was cleared to descend to 2,500 ft. The pilot subsequently reported at 4,000 ft to be climbing to 5,500 ft without a clearance.	Failure to comply with ATS
200806342	28-Sep-08	CTR	D	R172K	The aircraft was observed operating in the Albury control zone without broadcasting. The aircraft had departed just prior to the Tower opening, but continued to operate without contacting the Tower.	Violation of Controlled Airspace

200806120	29-Sep-08	CTR	D	M20J	The pilot did not comply with the taxi clearance and the aircraft was observed by ATC to have entered runway 25 without a clearance.	Failure to comply with ATS
200806121	29-Sep-08	CTR	D	M20J	On arrival, the aircraft was instructed to join left downwind for runway 25. The aircraft was subsequently observed by ATC to have joined right downwind without a clearance.	Failure to comply with ATS
200806847	18-Oct-08	CTR	C	DHC-8-402	After landing, evidence of a birdstrike was noted on the right wing flap. It could not be determined when the strike occurred.	Birdstrike
200806843	18-Oct-08	CTA	C	PA-31	The Embraer ERJ 170 crew inadvertently reported on the 045 radial. The aircraft was actually on the 145 radial. ATC issued a clearance that provided lateral separation with a Piper PA-31. A loss of separation assurance resulted.	LOSS OF SEPARATION ASSURANCE
200806843	18-Oct-08	CTA	D	ERJ 170-100 LR	The Embraer ERJ 170 crew inadvertently reported on the 045 radial. The aircraft was actually on the 145 radial. ATC issued a clearance that provided lateral separation with a Piper PA-31. A loss of separation assurance resulted.	LOSS OF SEPARATION ASSURANCE
200806915	21-Oct-08	CTAF (R)	G	340B	During a post-flight inspection, the crew noticed evidence of a birdstrike on the right side of the fuselage.	Birdstrike
200807197	10-Nov-08	CTR	D	PA-28-180	During the short final approach for runway 07, the aircraft struck a bird.	Birdstrike
200807638	27-Nov-08	CTA	A	A321-231	During the cruise, the captain's windshield anti ice started arching, followed by a growing crack on the left windshield.	Emergency
200808415	09-Dec-08	CTA	D	ERJ 170-100 LR	During the approach, the aircraft encountered severe turbulence. The crew conducted a missed approach.	Emergency
200807865	16-Dec-08	OCTA	G	280FX	During the initial climb, the helicopter struck a powerline and sustained serious damage.	Wire strike