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Preliminary Airspace Review of Wagga Wagga, NSW

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1 EXECUTIVE SUMMARY

The *Airspace Act 2007* (Act)[1] provides the Civil Aviation Safety Authority (CASA) with the authority to administer and regulate Australian-administered airspace and obligates CASA to conduct regular reviews of the existing classifications of Australian–administered airspace. The Office of Airspace Regulation (OAR) conducted a Preliminary Airspace Review (the Review) of the airspace arrangements and classifications within a 20 nautical mile radius of Wagga Wagga Airport (Wagga Wagga) to determine if the airspace remains fit for purpose[2].

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

An assessment of airspace incidents and feedback from stakeholders concluded that there are insufficient grounds to require changes to the existing airspace architecture around Wagga Wagga.

The primary concern among stakeholders are the risks associated with operations within the Wagga Wagga circuit considering the mix of passenger transport (PT)[3], training and general aviation aircraft in a Common Traffic Advisory Frequency (CTAF) environment. The circuit area can become congested during periods of intense circuit training and a simultaneous PT arrival or departure. However, there was little support from stakeholders for the re-establishment of the control tower with a control zone and control area. Furthermore, the current level of risk as indicated by the Australian Transport Safety Bureau Air Safety Incident Reports, the movement numbers, the passenger numbers and information provided through consultation validates that conclusion. Airspace separation occurrences in the circuit area have been comparatively few, being on average 2 per year since 2011.

CASA will continue to provide education and safety information seminars to improve awareness by all airspace users about operations in the vicinity of a non-controlled aerodrome.

1.1 Recommendations

The Review recommends that:

1. The airspace within a 20 nautical mile radius of Wagga Wagga is fit for purpose and should remain unchanged.
2. The Wagga Wagga Airport Safety and Security Committee should discuss recent occurrences with a view to agreeing to initiatives that can be implemented locally that reinforce pilot procedures and communications practices.

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

[2] For the purposes if this Review the term fit for purpose means the airspace is satisfactory for the purpose that it was intended to meet.

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

CONTENTS

2 INTRODUCTION

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

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

CASA conducted an Aeronautical Study of airspace in the vicinity of Wagga Wagga in 2010[4]. Recent increases in general aviation movements, a potential increase in pilot training and stakeholder comments regarding the apparent complexity of the traffic mix has resulted in the Office of Airspace Regulation (OAR) undertaking a new Preliminary Airspace Review (the Review). The Review is intended to ensure that the airspace architecture remains appropriate for the operations within the area.

2.1 Purpose

The purpose of the Review of Wagga Wagga Airport (Wagga Wagga) was to determine if there were any risks to the safety of air navigation around Wagga Wagga that would require changes to the existing airspace architecture.

2.2 Process

The review process included:

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

2.3 Scope

The scope of the study included consultation with stakeholders to gather necessary data and information related to airspace issues around Wagga Wagga. This included consultation with Public Transport (PT)[5] operators; charter operators; flying training schools; Airservices as an ATS provider; the Department of Defence (Defence) as an ATS provider and an operator of aircraft; the ATSB; emergency service organisations and the aerodrome operator.

The scope of this study was not intended to examine aerodrome facilities and infrastructure issues unless any shortcomings in these areas have a significant impact on the safety of airspace operations in the vicinity of Wagga Wagga.

4 The report is available on the CASA website https://www.casa.gov.au/landing-page/airspace .

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

3 BACKGROUND

3.1 Overview of Australian airspace classifications

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

Wagga Wagga is a designated non-controlled aerodrome in Class G airspace and is subject to Common Traffic Advisory Frequency (CTAF) procedures. Class E airspace exists above the aerodrome commencing at 8,500 feet (ft) above mean sea level (AMSL). Class C airspace exists above the Class E airspace to a lower level of Flight Level (FL) 125 with Class A airspace above that, beginning at FL180. (See Figure 1).

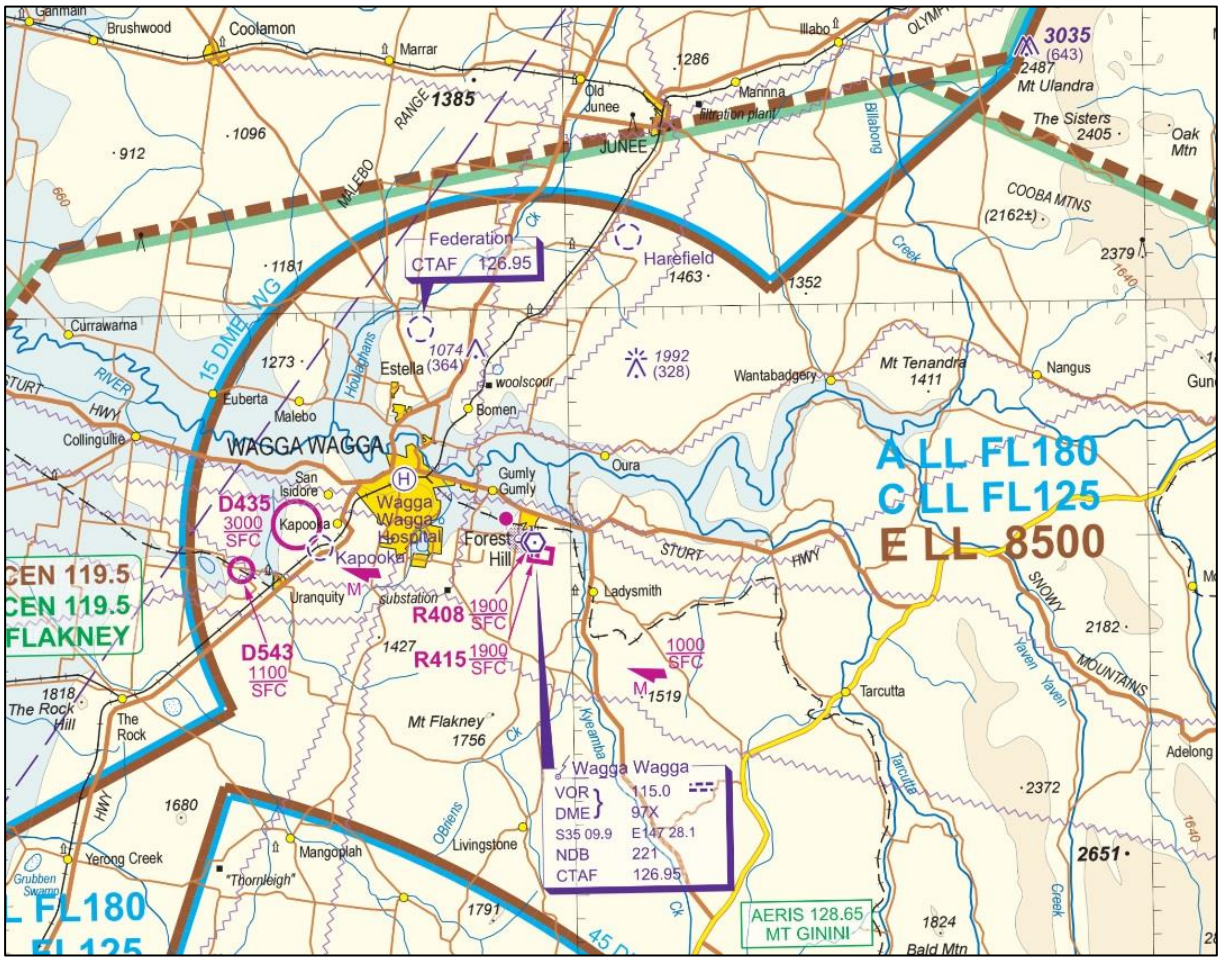


Figure 1 Extract of Sydney Visual Navigation Chart (VNC) (Airservices: Effective Date 8 November 2018)

Two Restricted Areas and two Danger Areas are in the vicinity of Wagga Wagga:

- R408 Wagga – 0.05 nautical mile (NM) radius circle, surface to 1,900 ft AMSL, activated by Notice to Airmen (NOTAM) and used as a surface firing range by the Royal Australian Air Force (RAAF).
- R415 Wagga – rectangular bounded area adjacent to R408, surface to 1,900 ft AMSL, activated by NOTAM and used for explosives demolition by the RAAF.

- D435 Kapooka – 1.0 NM radius circle, surface to 3,000 ft AMSL, active on a week daily basis or as promulgated by NOTAM and used for firing by the Australian Army.
- D543 Uranquinty – 0.5 NM radius circle, surface to 1,100 ft AMSL active H24 for high velocity exhaust plume venting.

3.2 Aerodrome

The Wagga Wagga aerodrome is located 5.8 NM south east of the city of Wagga Wagga at an elevation of 724 ft AMSL (Refer to Figure 2). The city of Wagga Wagga is located in south western NSW and has a population of around 47,000. With 148 weekly PT flights operating to and from the aerodrome, as well as charter flights, general aviation training and air freight operations, Wagga Wagga aerodrome is one of the leading regional aerodromes in Australia. Wagga Wagga aerodrome covers an area of approximately 500 acres (202 hectares) south of the Sturt Highway adjacent to the suburb of Forest Hill. The aerodrome is serviced by Regional Express Airlines (REX) and QantasLink, both of whom provide regular scheduled PT services to Sydney and Melbourne. The typical aircraft types operating at Wagga Wagga include the de Havilland Dash 8, SAAB SF340, Piper PA31, Cessna 310, 182,172 and 150, and a range of Beechcraft aircraft models which include Baron, B350, B200 and 1900. Rotary wing aircraft operating at Wagga Wagga include the Robinson R44 and R22. There are a number of Recreational Aviation Australia (RAAUS) aircraft which operate upon and in the vicinity of Wagga Wagga. In April 2009, the Australian Airline Pilot Academy (AAPA) established a flying training school where they operate a large fleet of Piper PA28 as well as PA44 aircraft.

The aerodrome is owned by the Commonwealth (Department of Defence). The civil side is leased to the Wagga Wagga City Council on a 30-year lease expiring in 2025.

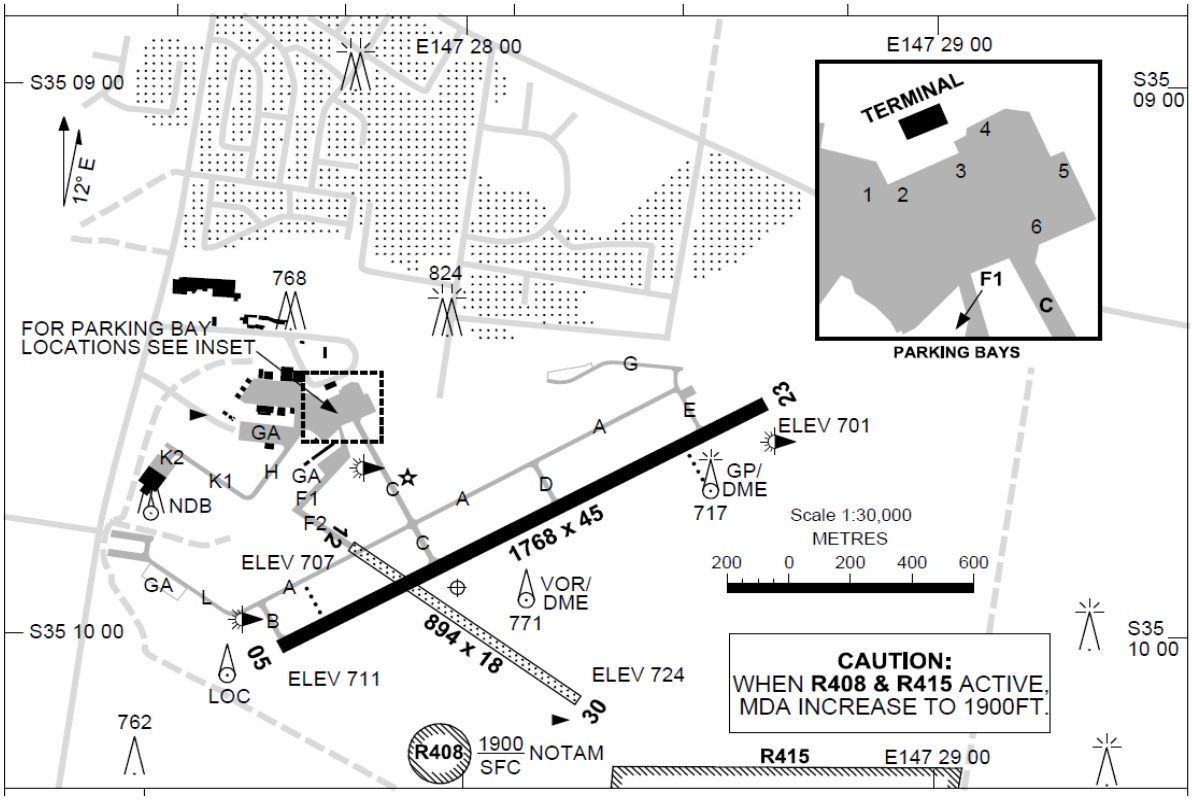


Figure 2 Extract of Departure and Approach Procedures (DAP EAST) (Airservices: Effective date 8 November 2018).

3.3 Air Navigation Service Providers

Wagga Wagga is used by visual flight rules (VFR) and instrument flight rules (IFR) aircraft and is a non-controlled aerodrome subject to CTAF procedures in accordance with Civil Aviation Advisory Publication (CAAP)166-01. ATS in the controlled airspace above Wagga

Wagga is provided by Airservices from the Melbourne ATS Centre. All aircraft within Class G airspace around Wagga Wagga are required to communicate using the CTAF 126.95 Mhz to enhance situational awareness and reduce the risk of a mid-air collision. An Aerodrome Frequency Response Unit (AFRU) provides confirmation to pilots that they are on the correct radio frequency.

3.4 Surveillance

Airservices has radar coverage in the vicinity of Wagga Wagga from an altitude of 5,000 ft AMSL and above. The Automatic Dependent Surveillance-Broadcast (ADS-B) area of coverage also extends to the same lower limit. The surveillance coverage is described as considerable above 5,000 ft AMSL.

3.5 Air navigation procedures

Airservices manages IFR aircraft operating in vicinity of Wagga Wagga inside Class E airspace above 8,500 ft AMSL to FL125. These services are provided by the Melbourne ATS Centre. An IFR aircraft in Class E is separated from other IFR aircraft and is also provided with a traffic information service as far as practicable on VFR traffic. All aircraft require a VHF radio and must carry a transponder. However, VFR aircraft do not require a clearance from air traffic control to enter, operate within or leave Class E airspace. Aircraft operating in Class G airspace in the vicinity of Wagga Wagga must do so in accordance with CAAP 166-01, “operations in the vicinity of a non-controlled aerodrome”.[6]

Wagga Wagga has a commissioned instrument landing system (ILS) which is operated and maintained by Airservices to runway 23.

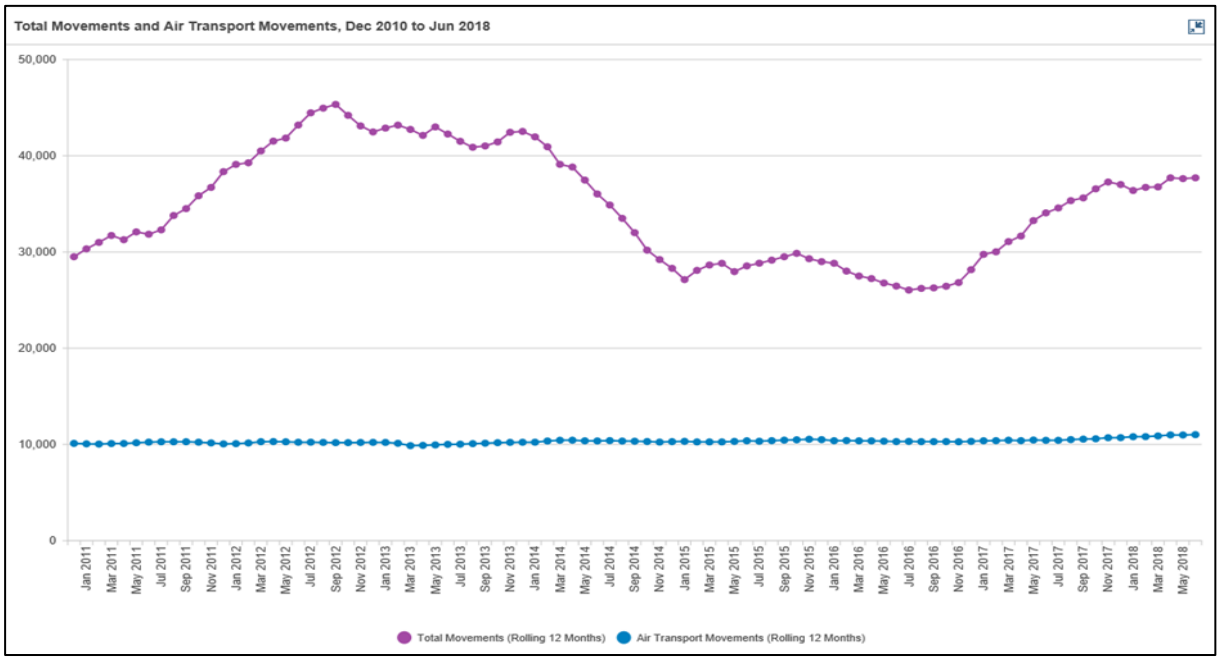
There are also a number of published Instrument Flight Procedures (IFPs) to both runway 23 and runway 05.

3.6 Wagga Wagga aircraft movements

Total annual aircraft movements at Wagga Wagga increased from 34,579 in June 2017 to 37,714 in June 2018 (10.7% growth). The growth has primarily resulted from an increase of approximately 26% in general aviation movements associated with flying training. PT movements also increased over the same period by approximately 580 movements.

The total movements numbers since the 2010 aeronautical study, have however, fluctuated from 29,513 in December 2010 through a high of 44,951 in August 2014, followed by a reduction to 27,136 in January 2015 making it difficult to establish a clear trend. In contrast, the PT movements have remained very steady throughout, recording a total of 10,114 in December 2010, remaining around this amount until 2017 when the number rose from 10,434 in June 2017 to 11,021 in June 2018. (Refer to Graph 1).

6 CAAP 166-01 can be found at the following link https://www.casa.gov.au/files/166-01pdf



Graph 1: Total Movements and Air Transport Movements Dec 2010 to June 2018.

Annual passenger numbers have fluctuated from 230,933 in December 2010 to a low of 222,247 in 2011. This was followed by a period of peaks and troughs until September 2013 (222,981) from which there was a relatively steady increase to the June 2018 result of 240,446.

The Wagga Wagga Airport Master Plan 2010[7] forecast a variety of scenarios regarding the growth in both annual passengers and movements ranging from conservative to high growth outcomes.

Regarding the annual passenger numbers, an 'Expected Value' scenario was developed which combines the economic factors and likelihood of all of the considered scenarios, to develop an indicative 'medium' forecast growth of 4.32% per annum from 2010 until 2030. This medium forecast was adopted as the most likely outcome. The forecast for 2017/2018 based upon this medium scenario was approximately 325,000 movements which is significantly greater than the actual result.

The forecast PT movements were derived using the passenger number forecasts calculated from the same medium growth scenario. However, the use of larger capacity aircraft was predicted in this scenario, resulting in the PT movement forecast being quite accurately reflected in the actual results recorded, despite the much greater forecast passenger numbers. While the introduction of larger capacity aircraft could alter the traffic mix considerably, there are no indications or known plans to date that larger capacity PT aircraft will be regularly scheduled into Wagga Wagga.

Fixed wing flying training is expected to represent the majority of movements at the aerodrome. In November 2018, AAPA indicated the flying school to be operating at approximately 40% of its current residential capacity of around 90 students. The school can cater for up to 200 students, however, accommodation and facilities would need to be constructed or sourced from beyond the airport precinct. The capacity to accept and train up to 200 students is available.

The RAAF maintains a base at the aerodrome, however, military movements are few and tend to be itinerant arrivals and departures from the RAAF Very Important Person (VIP) fleet or the occasional training aircraft.

There are frequent reported movements of aircraft conducting instrument landing practice using the commissioned ILS. Movements of this type are expected to increase because of

[7] The Airport Master Plan 2010 can be found at the following link https://waggawaggaairport.com.au/about/airport-master-plan

increasing difficulty in accessing these navigation aids for training approaches at busy capital city and regional airports.

The OAR will monitor aircraft movements to assess the effect in terms of airspace risks and the safety of air navigation that result from increasing volume or complexity in aviation activity.

4 AVIATION INCIDENTS

4.1 Summary of incidents

A review of the Wagga Wagga incident data between December 2010 and September 2018 has revealed that from 269,500 movements in the review area, 410 total incidents were reported. From these total incidents, 9% (46) were categorised as airspace occurrences in accordance with the ATSB taxonomy. (Refer to Table 1). These 46 airspace related occurrences can be generally described as:

- Errors in pilot procedures,
- Failures in see and avoid procedures, and
- Communication failures.

A deeper review of these airspace occurrences revealed that most were caused by human error, including where pilots failed to effectively coordinate with other operators or failed to communicate their intentions, resulting in either runway incursions or other aircraft having to take avoiding action.

AIRSPACE OCCURANCES BY ATSB CATEGORY DEC 2010 TO SEPT 2018	
ATSB CATEGORY	**NUMBER OF TOTAL OCCURANCES**
Airborne collision alert system warning	5
Loss of separation	2
Loss of separation assurance	2
Near collision	4
Aircraft Separation Issues	31
Operational Non-Compliance	2
	46

Table 1: Wagga Wagga Airspace Occurrences by ATSB Category.

Twelve of the occurrences in the above table occurred within the Wagga Wagga circuit area, with 10 of those classified as airspace issues and 2 as near collisions (both involving two light aircraft). Typical among these occurrences were aircraft either on the same leg of the circuit or at times the final approach for the reciprocal runway end. Both aircraft were consequently operating either within too close a proximity to each other or an opposing heading and track. As a result, evasive action, a missed approach or a go around was required to ensure separation was maintained.

The annual reported occurrences in the vicinity of Wagga Wagga, have remained steady since 2011 with a high of 4 reported in that year, followed by either a single occurrence or 2 occurrences reported for each year following until 2017. Of these occurrences 2 involved a PT aircraft, the most recently reported occurrence being in November 2017.

An unreported incident occurred in June 2018 where a training aircraft operating in the circuit area and a PT operator conducting a straight in downwind approach to the reciprocal runway resulted in the PT aircraft conducting a “go around” to maintain separation. While occurrences such as these were described by stakeholders during the consultation period as being rare, they nevertheless considered these to be routine – albeit undesirable. This issue is discussed further on in this Review.

Common in a small number of the occurrences within the circuit area is the practice of adopting straight in or downwind approaches to the runway against the prevailing circuit traffic. There are a number of reasons that operators might undertake this procedure, among those being an intended shared convenience. For example, a larger category aircraft would avoid backtracking if arriving from runway 23 and minimise its runway occupancy for the other traffic in the circuit. In addition, the larger capacity and higher performance aircraft could avoid mixing with the slower general aviation and training aircraft in the circuit therefore minimising the effects upon other aircraft movements and potential risk. Other reasons include conducting practice instrument procedures to maintain or achieve pilot proficiency by utilising the ILS to runway 23.

While the practice of straight in approaches against the circuit traffic is not isolated to PT operations, it is however common for the PT operators to adopt this procedure depending on their port of origin in relation to the arrival runway. Sydney arrivals tend to conduct a straight in approach from the east to runway 23. However, safety is paramount, and the obligations under CAAP 166-01 take primacy. On time performance is not the critical concern among the PT operators and will only be considered once all other safety elements have been addressed.

The risk associated with reciprocal runway approaches, in pursuit of shared convenience for both parties needs to be considered as its potential risk may outweigh any benefit. There are obvious circumstances where undertaking this procedure presents no concerns, such as the arriving aircraft may be one of very few or even the sole aircraft in the area. However, continuing to adopt this procedure in circumstances where there are many aircraft in the circuit may generate an undesirable level of risk, and further consideration should be given to additional mitigation measures to reduce this risk

5 STAKEHOLDER COMMENTS

The following matters were raised by the stakeholders during the consultation period.

Clarity of communications between airspace users, especially clear and accurate reporting of position and intentions. Local stakeholders have commented that maintaining effective communication is one of the most challenging aspects at Wagga Wagga. Significant amounts of VFR and IFR flight training operations are undertaken, which includes persons for whom English may not be their first language, on some occasions resulting in unfamiliar sounding broadcasts. Communication near or on the runway and airborne in the circuit area, particularly during those periods when there are training aircraft operating, other general aviation activity, coupled with a PT arrival or departure can be challenging.

Stakeholders reported the difficulty understanding the intentions of pilots who either do not use standard radio phraseology, use colloquialisms or idioms or for whom their radio communication is simply poor. It has been reported that local and itinerant pilots at times make radio calls that fail to follow the standard radio phraseology format and, in some instances, use non-standard phraseology which can confuse other airspace users, particularly student pilots.

Stakeholders raised concern for the degree of radio chatter being broadcast and the consequent potential to “saturate” the frequency.

Operators highlighted the challenges involved with “slotting into” a busy circuit. This may be exacerbated when operators are undertaking a straight in approach downwind against the prevailing traffic direction. Conversely though, operators have commented that joining the

circuit presents its own challenges and would rather perform a straight in approach. For example, a high-performance PT aircraft mixing with light training aircraft or recreational aircraft represents a significant miss-match in performance and capability. There is a substantial mix of traffic that operate at and in vicinity of the airport. While it is generally accepted that the current procedures are satisfactory, there are circumstances where aircrew will either elect to coordinate a straight in or "downwind" approach to the runway against the prevailing circuit traffic (often with unintended increased risk) or elect to delay their arrival by orbiting adjacent to the circuit area rather than entering the potentially congested circuit.

Many stakeholders commented that the training environment has the potential to become far more congested should the enrolment numbers increase at the airline pilot academy and / or training organisations elect to establish new operations at Wagga Wagga.

Itinerant traffic unfamiliar with the environment or equally unaccustomed to the mix of operations at Wagga Wagga may represent an element of risk as well. The airport operates an ILS which is used by itinerant operators for currency and training purposes.

Anecdotal and unconfirmed reports that some crew may exaggerate their position reports in order to subtly influence their arrival to the circuit have been received.

Some stakeholders commented that there is an apparent lack of common knowledge and understanding among some of the stakeholders. This has the potential to create miscommunication and confusion.

An understanding of the broader role of the airport operator has, particularly in regard to its risk mitigation and acceptance processes was discussed. This aspect of risk mitigation was described by Airport Management as unintentionally misunderstood at times.

The issue of language and cultural awareness was raised. A large number of international students are currently undertaking training at Wagga Wagga. An awareness of the comparative level of experience and the language challenges and a possible latent tendency to be less self-assured should be recognised. Examples where students tend to "cede" to the requests of other operators to their own detriment can develop into uncomfortable situations and generate confusion for all parties.

The provision of air traffic services in the adjacent controlled airspace was mentioned. Traffic information is generally provided later in the descent compared to other locations, with progressive descent clearances granted down to 9,000 ft AMSL at which point traffic information is given with a clearance to leave controlled airspace. This differs from some other aerodrome arrivals where traffic information is generally provided prior to top of descent where a clearance to leave the Control Area (CTA) on descent is also granted. This situation can be particularly problematic at Wagga Wagga due to the mix and amount of traffic which needs to be coordinated late in the descent when workload is significantly higher.

Crews have reported that the sole point of entry to the runway for PT aircraft at the aerodrome is particularly problematic in terms of a joint entry and exit. Coincident PT movements require careful cooperation as neither PT aircraft are able to access the parallel taxiway due to their category, therefore coordinated runway backtracking and ground holding manoeuvres are required. This increases runway occupancy time generating a knock-on effect for the circuit traffic. This issue is less of a concern for the lighter category GA aircraft that are permitted to use the available taxiway.

6 KEY ISSUES AND FINDINGS

A number of common themes emerged from the stakeholder comments above, which can be categorised into the following Issues with associated Findings / Observations and Outcomes;

- Communication;
- Congestion;
- Procedures; and

- Shared knowledge and understanding

6.1 Communication

Issue: Clarity of communications between airspace users especially clear and accurate reporting of position and intentions.

Finding: Stakeholders agreed that inter-aircraft communication regarding the position and intent of aircraft is an important aspect of operating into a non-controlled location. While most agreed that the issue was by no means limited to Wagga Wagga and not a particularly significant problem, it periodically becomes an unfavourable element of operations on the aerodrome and in the airspace. All stakeholders were able to describe situations in the Review area where errant communication has generated confusion and elevated risk.

Outcome: CASA should provide safety education safety seminars and information sessions to improve pilot awareness and highlight the risks associated with poor communication and the obvious safety benifits from clear and accurate radio communication and frequency selection in the vicinity of a non-controlled aerodrome.

Outcome: The Wagga Wagga Airport Safety and Security Committee should discuss the recent occurrences with a view to agreeing to initiatives that can be implemented locally that reinforce pilot procedures and communications practices.

Issue: Use of non-standard radio phraseology, colloquialisms, idioms or poor radio communication.

Finding: Stakeholders agreed that the matter of non-standard phraseology, while not limited to Wagga Wagga, had nevertheless transpired at times. All were able to describe situations in the review area where these practices tended to generate confusion and potentially elevate risk.

Outcome: It was agreed that standardising communications and encouraging all operators to adopt these is an appropriate and sound method to develop predictability particularly within the circuit area. Maintaining the Wagga Wagga Airport Safety and Security Committee to establish and minute agreements to and compliance with the established “locally agreed” behaviours will also enhance predictability and reduce risk. The local operators meet regularly, and this provides an opportunity to prepare and agree upon certain procedures.

Issue: The degree of radio chatter being broadcast and the potential to “saturate” the frequency.

Finding: Some stakeholders raised the matter of excessive broadcasting, more specifically broadcasts relating to ground operations such as taxing between parking areas, run up bays, refuelling stations or aprons. While those stakeholders recognised the reasons why operators undertake these broadcasts, there is nevertheless a risk of saturating the frequency particularly if there are a number of aircraft airborne in the circuit area.

Outcome: The Wagga Wagga Airport Safety and Security Committee adopting and agreeing upon “local” behaviours should reduce instances of potential saturation hence enhance predictability and reduce risk. The local operators meet regularly, and this provides an opportunity to prepare and agree upon certain procedures.

Issue: Alleged exaggeration of position reporting by some operators in order to manage the circuit traffic and obtain priority.

Finding: This matter was raised anecdotally only and there was no evidence tendered of this practice. Furthermore, the issue was not widely reported.

Observation: The Wagga Wagga operators agree that local airspace users by and large will try to provide priority as a means of reducing the likelihood of this practice wherever possible

and safe to do so. However, the practice of deliberate incorrect position reporting is not supported by any of the operators interviewed by any means.

6.2 Congestion

Issue: Operators highlighted the challenges involved with “slotting into” a busy circuit. Further, the environment has the potential to become far more congested.

Finding: Stakeholders unanimously agreed that traffic within the review area becomes congested from time to time and managing an arrival or departure during these times represents a considerable challenge. The mix of traffic and experience is a significant factor with flying training, PT and high-performance operations being conducted coincidently.

Outcome: Wagga Wagga is typical of a non-controlled airport with such a mix of operations, the number incidence of occurrences relating to airspace separation in the circuit area are comparatively few. The current non-controlled procedures appear to be working satisfactorily.

Feedback from airspace users around Wagga Wagga indicated that an improvement in airmanship and frequency management would enhance operations in the region for all airspace users. Standardising communications and encouraging all operators to adopt these is an appropriate and sound method to develop predictability within the circuit area. Agreeing to limit the number of aircraft in the circuit may also assist. If the mix of traffic were to significantly change, such as flying training were to increase because of the establishment of a new training organisation, these procedures may be rendered less effective.

Issue: Itinerant traffic unfamiliar with the mix of operations at Wagga Wagga may represent an element of risk as well.

Finding: Stakeholders described circumstances where itinerant aircraft conducting practice instrument approaches might disturb an otherwise orderly circuit flow unintentionally. The ILS is located on runway 23, and operators conducting these approaches may elect to do so despite all other aircraft movements and circuits being conducted to the opposite runway end (i.e. runway 05). Operators may be unaccustomed to the traffic mix or equally unaware of the local procedures in place due to the itinerant nature of these operations.

Outcome: Wide distribution of information through various appropriate media describing the local environment and articulating the agreed local procedures is highly desirable notwithstanding mandatory compliance with all the regulatory requirements.

6.3 Procedures

Issue: Operators are at times electing to conduct a straight in approach, downwind, against the prevailing traffic direction.

Finding: While not limited to Wagga Wagga, operators may elect to conduct a straight in approach depending upon the direction of their arrival and the capabilities of the aircraft for a number of reasons. Reducing the effect on the circuit traffic by minimising their time in the area is among these reasons as is reducing runway occupancy times by avoiding backtracking. The on-time performance is not the critical concern among the PT operators. Straight in approaches are only considered after appropriate airborne coordination and communication has occurred and all other safety elements have been addressed. All operators that conduct these approaches are cognisant of the regulatory requirements under CAAP 166-01 among others.

Outcome: It was agreed that standardising the procedures and encouraging all operators to adopt these is an appropriate and sound method to develop predictability; particularly within the circuit area. Agreeing to and complying with the established “locally agreed” behaviours may also enhance predictability and reduce risk. The local operators meet regularly at the Wagga Wagga Airport Safety and Security Committee meeting, and this provides an opportunity to prepare, agree upon certain procedures and consequently record the

outcomes. Adopting common behaviours, agreeing among each other on a manageable number of aircraft in the circuit and initiatives such as passing information onto other operators may assist by reducing confusion.

Issue: The provision of air traffic services in the adjacent controlled airspace.

Finding: Traffic information for an arrival into Wagga Wagga from controlled airspace is generally provided later in the descent, compared to other locations. Aircraft departing Class C airspace and entering Class E, are provided progressive descent clearances down to 9000 ft AMSL at which point traffic information is given with a clearance to leave the Class E CTA. This differs from other CTAF arrivals where traffic information is generally provided prior to top of descent where a clearance to leave CTA on descent is also granted. This situation can be problematic at Wagga Wagga due to the mix and amount of traffic which needs to be coordinated late in the descent when workload is significantly higher.

Outcome: PT crews have reported that the provision of IFR traffic prior to top of descent would greatly improve situational awareness and better facilitate an arrival into circuit area. Some flexibility with departures - as is the case with locations such as Dubbo NSW, where a departure on a certain heading into CTA can be negotiated with ATC when taxiing; may also be desirable. This procedure would provide more flexibility if implemented at Wagga Wagga. The OAR has passed these comments onto Airservices to determine the options available.

Issue: Crews have reported that the sole point of entry to the runway for PT aircraft at the aerodrome is problematic; in terms of a joint entry and exit.

Finding: A parallel taxiway that accommodates larger category aircraft would reduce runway occupancy times and increase the efficiency of the aerodrome.

Observation: While airport infrastructure is outside the scope of this airspace review it's worthwhile noting this observation. Wagga Wagga Council may wish to consider this matter.

6.4 Shared knowledge and understanding

Issue: A broader understanding of the role of the airport operator in regard to risk mitigation and acceptance.

Finding: The airport operator is required to undertake and formalise its risk assessments, and having identified risks, it must mitigate these to an Acceptable Level of Safety (ALOS). This process also involves the acceptance of residual risk, the acceptance of which at times may need to be elevated to higher management within the Council if the risks remain at levels outside the delegation of the airport manager.

Outcome: It is understood that all the stakeholders have a vested interest in reducing risk. It is for these reasons that the Airport Safety and Security Committee involving all stakeholders on the airport has been established. The Committee, which meets regularly, forms a critical element in the risk identification and mitigation procedure for the Airport Operator. The shared outcomes of these meetings should be recorded and consequently drive the safety outcomes on the airport ensuring there is balanced involvement for the benefit of all concerned.

Issue: The sensitive issue of language and cultural awareness. A large number of international students currently undertake training at Wagga Wagga.

Finding: Examples where operators have misunderstood the broadcasts of some students or where some inexperienced students might "cede" to the requests of other operators to their own detriment were reported. These occurrences can develop into uncomfortable situations and generate confusion for all parties.

Observation: This issue is common at locations where significant training of international students is undertaken. The Academy at Wagga Wagga operates an in-house English proficiency lab which is used to develop the level of proficiency among the students. The Academy also maintains internal reporting and checking as a means of tracking matters such as those described above and initiating action to reduce risk, through education. However, local and itinerant pilots should also be aware that communication, according to ICAO Standards and Recommended Practices, is a two way process being a shared responsibility between pilots who are native English speaking, as well as non-native English-speaking. All operators have an equal responsibility and obligation to ensure their communications are as comprehensible as possible and be cognisant of the challenges faced by non-native English-speaking pilots/students by adopting language and communications that will facilitate improved communications. An awareness of not only the comparative level of experience but also the language challenges and a possible latent tendency to be less self-assured should be recognised.

7 CONCLUSION

CASA has conducted an analysis of aircraft movements and incidents in vicinity of Wagga Wagga and concluded that the existing airspace architecture is fit for purpose. Feedback from airspace users around Wagga Wagga indicated that an improvement in aircrew appreciation and understanding of the locality, leading to better airmanship and frequency management would enhance situational awareness and safety in the region for all airspace users.

The primary concern among stakeholders is the risks associated with operations within the Wagga Wagga circuit area, considering the mix of PT, training and general aviation aircraft in a CTAF environment. The circuit area can become congested at times during periods of intense circuit training and a simultaneous PT arrival or departure. The situation is exacerbated by the “straight in arrivals” being conducted against the prevailing circuit direction. There was little support from stakeholders for the establishment of control zone. The current level risk as indicated by the ASIR incident reports, the movement numbers, the passenger numbers and information provided through the consultation tend to validate that conclusion. Airspace occurrences in the circuit area are comparatively few, being on average 2 per year since 2011.

The most appropriate initiative will involve local procedures and communication between all parties to reduce the risks inherent with the activities at Wagga Wagga. CASA will also continue to provide education and safety information seminars at Wagga Wagga to improve awareness by all airspace users about operations in the vicinity of a non-controlled aerodrome.

The movement numbers forecast in the 2010 Airspace Review Report, as being a “trigger” for investigation regarding re commissioning the tower have failed to eventuate. However, if the mix were to alter, such as flying training were to increase because of the establishment of a new training organisation, the initiatives described above may be rendered less effective and consideration a further risk assessment would need to be conducted.

ANNEX A – ACRONYMS AND ABBREVIATIONS

Acronym/abbreviation	Explanation
AAPS	Australian Airspace Policy Statement
Act	*Airspace Act 2007*
ADS-B	Automatic Dependent Surveillance - Broadcast
AFRU	Aerodrome Frequency Response Unit
Airservices	Airservices Australia
ALA	Aircraft landing area
ALOS	Acceptable Level of Safety
AMSL	above mean sea level
ANSP	Air navigation service provider
ASA	Aviation Safety Advisor
ASIR	Aviation Safety Incident Report
ATC	Air Traffic Control
ATS	Air Traffic Services
ATSB	Australian Transport Safety Bureau
CAAP	Civil Aviation Advisory Publication
CASA	Civil Aviation Safety Authority
CTA	Control Area
CTAF	Common Traffic Advisory Frequency
DA	Danger Area
Defence	Department of Defence
ERSA	En Route Supplement Australia
ft	feet
FL	Flight Level
GA	general aviation
H24	24 Hours per day
ICAO	International Civil Aviation Organization
IFP	Instrument Flight Procedure
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
kt	knots
nm	nautical miles
OAR	Office of Airspace Regulation
NOTAM	Notice to Airmen
PT	passenger transport
QRIR	Quarterly Risk Indicator Review
RAAF	Royal Australian Air Force
RA	Restricted Area
RAPAC	Regional Airspace and Procedures Advisory Committee
RNAV	Area Navigation
SEG	Stakeholder Engagement Group
VFR	Visual Flight Rules
VIP	Very Important Person
VMC	Visual Meteorological Conditions
VNC	Visual Navigation Chart
VTC	Visual Terminal Chart

ANNEX B – AUSTRALIAN AIRSPACE STRUCTURE

Class	Description	Summary of Services/Procedures/Rules
A	All airspace above Flight Level (FL) 180 (east coast) or FL 245	Instrument Flight Rules (IFR) only. All aircraft require a clearance from Air Traffic Control (ATC) and are separated by ATC. Continuous two-way radio and transponder required. No speed limitation.
B	Not currently used in Australia.	
C	In control zones (CTRs) of defined dimensions and control area steps generally associated with controlled aerodromes	All aircraft require a clearance from ATC to enter airspace. All aircraft require continuous two-way radio and transponder. IFR separated from IFR, VFR and Special VFR (SVFR) by ATC with no speed limitation for IFR operations. VFR receives traffic information on other VFR but is not separated from each other by ATC. SVFR are separated from SVFR when visibility (VIS) is less than visual meteorological conditions (VMC). VFR and SVFR speed limited to 250 knots (kt) indicated air speed (IAS) below 10,000 feet (ft) Above Mean Sea Level (AMSL)*.
D	Towered locations such as Bankstown, Parafield, Archerfield, Parafield and Alice Springs.	All aircraft require a clearance from ATC to enter airspace. For VFR flights this may be in an abbreviated form. As in Class C airspace all aircraft are separated on take-off and landing. All aircraft require continuous two-way radio and are speed limited to 200 kt IAS at or below 2,500 ft within 4 NM of the primary Class D aerodrome and 250 kt IAS in the remaining Class D airspace**.IFR are separated from IFR, SVFR, and are provided with traffic information on all VFR. VFR receives traffic on all other aircraft but are not separated by ATC. SVFR are separated from SVFR when VIS is less than VMC.
E	Controlled airspace not covered in classifications above	All aircraft require continuous two-way radio and transponder. All aircraft are speed limited to 250 kt IAS below 10,000 ft AMSL*, IFR require a clearance from ATC to enter airspace and are separated from IFR by ATC, and provided with traffic information as far as practicable on VFR. VFR does not require a clearance from ATC to enter airspace and are provided with a Flight Information Service (FIS). On request and ATC workload permitting, a Surveillance Information Service (SIS) is available within surveillance coverage.
F	Not currently used in Australia.	
G	Non-controlled	Clearance from ATC to enter airspace not required. All aircraft are speed limited to 250 kt IAS below 10,000 ft AMSL*. IFR require continuous two-way radio and receive a FIS, including traffic information on other IFR. VFR receive a FIS. On request and ATC workload permitting, a SIS is available within surveillance coverage. VHF radio required above 5,000 ft AMSL and at aerodromes where carriage and use of radio is required.

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

ANNEX C – REFERENCES

- Aeronautical Information Publication (AIP) – November 2018
- *Airspace Act 2007*
- Airspace Regulations 2007
- Australian Airspace Policy Statement – 2018
- AIP Departure and Approach Procedures (DAP East) – Effective November 2018
- Designated Airspace Handbook – November 2018
- En route Supplement Australia – November 2018
- Wagga Wagga Airport Master Plan 2010 - 2030

ANNEX D – LIST OF STAKEHOLDERS

The following stakeholders contributed to the Review

Position	Organisation
Aerodrome Inspector Southern NSW	Civil Aviation Safety Authority (CASA)
Airport Facility Manager	Wagga Wagga City Council
Aviation Safety Advisor NSW	Civil Aviation Safety Authority (CASA)
Chief Flying Instructor	Australian Airline Pilot Academy (AAPA)
Chief Pilot	Wagga Wagga Air Centre
General Members	Regional Airspace and Procedures Advisory Committee (RAPAC) NSW
General Members	Wagga City Aero Club
OAR Liaison	Department of Defence Head Quarters
President	Wagga City Aero Club
Principal Operators	Wagga Wagga Air Centre
Range Control Officer	Department of Defence Kapooka
Regulatory and Operations Compliance	Qantaslink
Safety Technical Officer	Australian Federation of Air Pilots

ANNEX E –STAKEHOLDER RESPONSES

Organisation	Summary of Response
Australian Federation of Air Pilots	General acceptance of the report, however articulated some surprise at the absence of support among stakeholders for the reintroduction of control services. Acknowledged the cost aspects inherent with the reintroduction of control services as well as the construction of an extended parallel taxiway.
Wagga City Aero Club	Widespread support for the recommendations and accepting of the approach to the matters raised in the report. Prefer to see a proactive approach to pilot education through information sessions and would welcome CASA's involvement in that regard. Provided members comments regarding RAAus operations at the airport as well as the availability of low-cost effective avionics for VFR aircraft such as ADS-B.
Airservices Australia	See letter attached.
Qantaslink	See letter attached.

airservices

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Anthony Lawler
Airspace Project Specialist
Civil Aviation Safety Authority
GPO Box 2005
Canberra ACT 2601

Dear Anthony

RE: Draft Preliminary Airspace Review of Wagga Wagga, November 2018

Thank you for the opportunity to comment on the draft Preliminary Airspace Review of Wagga Wagga (WG).

Airservices would like to comment on the provision of ATS in the adjacent controlled airspace, section 6.3.4, as follows.

Traffic is passed either on first contact with 119.5 (HUM VOLUME 38NM from WG) or approaching base of CTA, aircraft may or may not be on descent. Higher performance aircraft such as Qantas Link Q400 from Sydney would be on descent.

The strategy of passing traffic to aircraft approaching base of CTA is utilised when there is a large volume of traffic at WG (both IFR and VFR) in an attempt to make traffic as relevant as possible. This strategy also minimises the amount of communications on both Area frequency and CTAF.

Considering the quantity of ILS approaches and training flights that occur at WG, further increased during peak times, it is difficult to determine whether some IFR aircraft will be traffic to an inbound aircraft due to a delay in becoming airborne caused by circuit VFR traffic. This situation makes it impractical to relay traffic to Goulburn (GLB) sector. In addition, transferring aircraft early would be problematic considering the density of traffic in GLB sector.

Flexible clearances are often utilised for departures facilitating radials such as the WG 029R and WG 084R. However, to provide more certainty for operators a race track pattern which segregates the arrival (AVBEG_WG)/ILS R23 Path with departures to Sydney (such as the WG 029R) would be beneficial.

If you have any questions please contact Naomi Ford on 02 6268 4353.

Yours sincerely

Garth Bartier
Regulatory Performance Manager
17 December 2018

06/02/2019

Mr Anthony Lawler
Acting Team Leader
Airspace Operations
Air Navigation, Airspace & Aerodrome Branch
Civil Aviation Safety Authority

Re: Draft Preliminary Airspace Review of Wagga Wagga - November 2018

Dear Anthony,

QantasLink appreciates the opportunity to comment on the draft Preliminary Airspace Review of Wagga Wagga, dated November 2018.

The review accurately details the present challenges facing airspace users within the Wagga Wagga CTAF environment, in particular the varying traffic mix and densities that can be encountered. As an operator of Public Transport (PT) services to and from the airport, the matters raised in the original QantasLink submission to this review remain relevant.

The findings of the review with respect to effective air-to-air communications and use of standard phraseology (section 6.1) are valid, however commentary contained within section 6.4.6 stating that operators be cognisant of the challenges faced by non-native English-speaking pilots/students by '*...adopting language and communications that will facilitate improved communications*' may require clarification. QantasLink's expectation when flying into non-towered airports such as Wagga Wagga is that all airspace users be proficient in the English language as per ICAO standards and recommendations, since this is the very foundation of communications and effective separation assurance with other aircraft.

QantasLink acknowledges CASA's continued efforts to provide education and safety information seminars at Wagga Wagga to improve awareness by all airspace users about operations in the vicinity of a non-controlled aerodrome. In terms of traffic density and associated inherent risk, Wagga Wagga remains a significant and challenging CTAF environment for QantasLink flight crew.

Lastly, it is recognized that the movement and passenger numbers at Wagga Wagga have not met earlier forecasts nor do they meet regulatory triggers for establishment of Air Traffic Services. Given the unique challenges and threats present at the location however (as indeed described in the review), QantasLink would keenly support further examination of the environment and challenges at Wagga Wagga which could include options for enhanced Air Traffic Services.

Yours Sincerely

Captain Shubh Saxena
Regulatory & Operations Compliance Advisor, Airline Operations
QantasLink