

**Twenty Eighth Meeting of the
Informal South Pacific ATS Co-ordinating Group
(ISPACG/28)**

**Papeete, Tahiti
5-7 March 2014**

Agenda Item 5.1 Seamless Airspace

Australian ADS-B Update

Presented by Airservices Australia

SUMMARY

This working paper provides an update to current and projected Australian ADS-B activities.

1. INTRODUCTION

- 1.1 Australia has recently passed the milestone of 10 years of operational use of ADS-B. During this time, ADS-B sites have been installed providing continuous (high level) ADS-B coverage across Australia. This ATS surveillance information is used by controllers to apply radar-like separation (5NM) as well as providing the additional alerting associated with ATS surveillance information

2. DISCUSSION

- 2.1 This working paper provides information on the recently implemented ADS-B mandate, pending mandates, as well as a new project to install additional ADS-B sites.

2.2 Australian ADS-B mandate

- 2.2.1 The Australian ADS-B mandate came into effect on 12th Dec 2013. This mandate applies to all IFR non-State aircraft flying at or above 29 000 feet in Australia's airspace, and is described in Australian AIP SUP H136/13. A briefing on the mandate was provided to ISPACG/27 in WP02.
- 2.2.2 The final implementation of the mandate was slightly different to that originally described in the ISPACG WP, and so a revised briefing follows:

2.2.3 “ADS-B airspace” has been defined as airspace at or above FL290 over:

- mainland Australia and Tasmania;
- the sea south of and including air route B598 (Gulf of Carpentaria);
- the sea north of and including air routes L513 and Q27 (Great Australian Bight) outside radar coverage E of a line CDU-MTI.

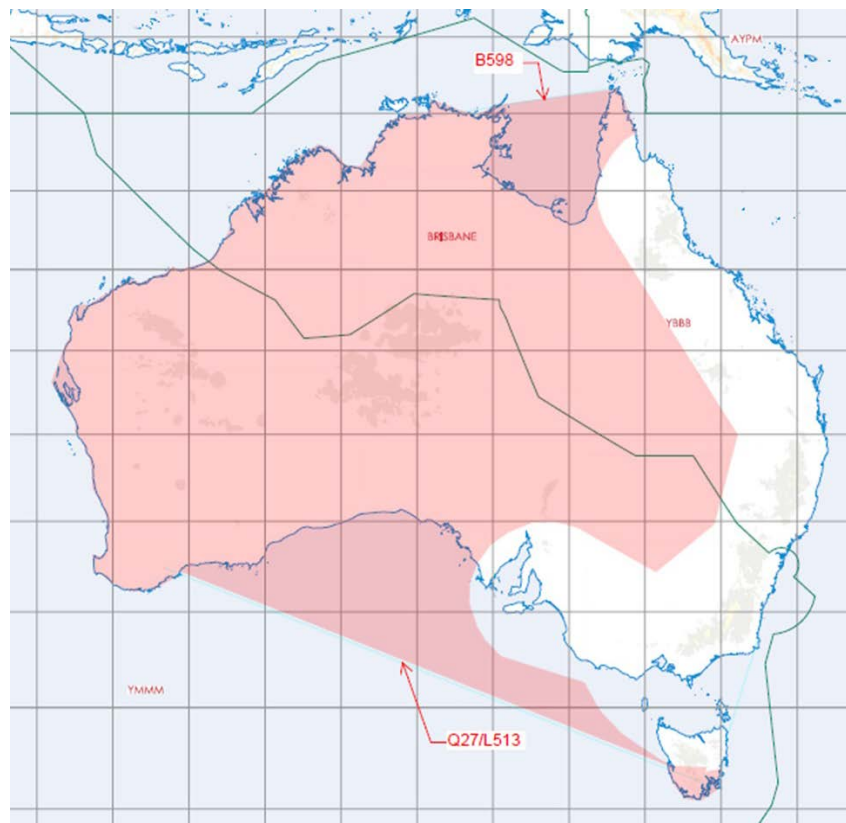


Fig1. “ADS-B airspace”

2.2.4 For a non-ADS-B-equipped aircraft to operate within this ADS-B airspace, it must:

- be a STATE aircraft; or
- have received an approval from Airservices Australia; or
- be subject to an Emergency or declared a MERCY flight.

2.2.5 “ADS-B Exempt Airspace” has been defined as Australian administered airspace that is not ADS-B airspace. This airspace is shaded in green in the diagram below.

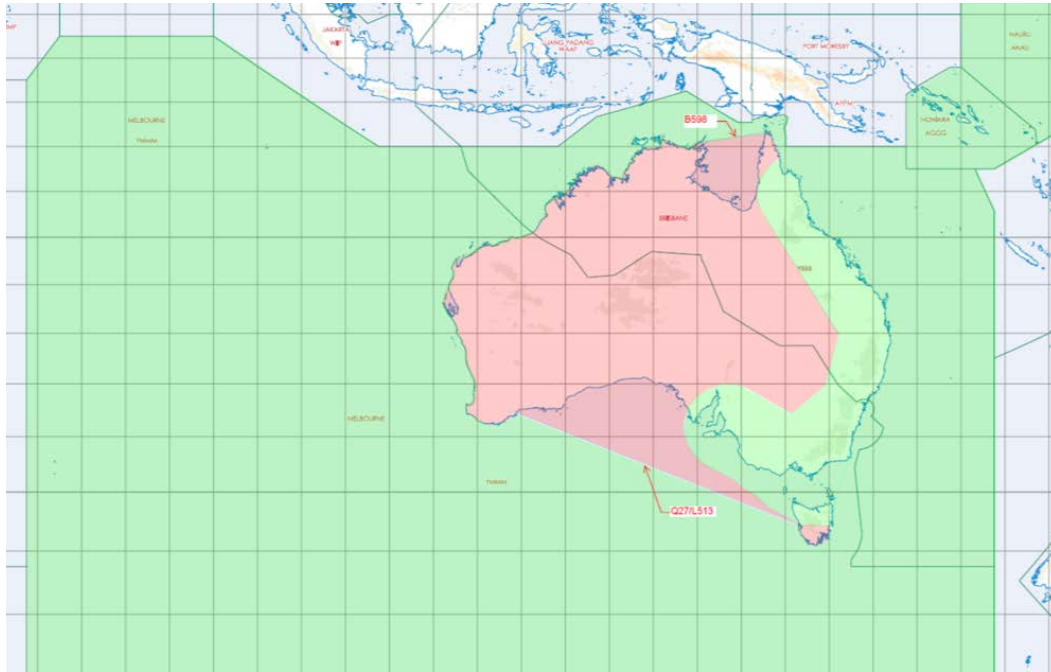


Fig2. ADS-B exempt airspace

2.2.4 CASA may provide exemptions for aircraft to operate within this area at or above FL290. Aircraft with an exemption must plan with “RMK/ADSB EXEMPT” in item 18 of the flight plan. If a non-ADS-B aircraft operator intends to plan within this area, it must:

- be a STATE aircraft; or
- have been issued with an exemption from CASA; or
- have been issued with an approval from Airservices; or
- be subject to an Emergency or be declared a MERCY flight.

2.3 Coverage and Communications Enhancement Project (ACME)

2.3.1 Under this new project 14 new ADS-B ground stations will be installed between 2014 and 2016. Thirteen of these sites will be located on mainland Australia, and one will be located on the Bayu Undan Gas Platform, between northern Australia and Indonesia. The new sites and associated coverage (at 10 000ft) are shown in green below:

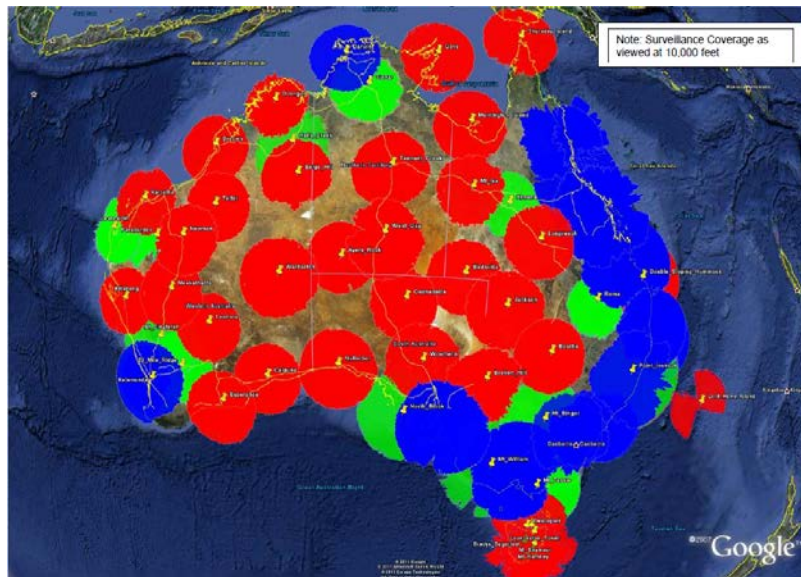


Fig 3. ATS surveillance coverage (10 000 ft)



2.3.2 ACME provides additional surveillance for Australia’s regional fleet in support of the upcoming ADS-B mandates, as well as supporting large increases in traffic levels in Western Australia (due to mining activity). The additional ADS-B sites will also reduce the risk of weather induced ADS-B outages.

2.3.3 The current schedule for implementation of these additional ADS-B sites is as follows:

Date of implementation	Location
28 th Nov 14	Mt William, Halls Creek, 23 Mile ridge
20 th March 2015	Mt Tassie, Roma, Mt Singleton
26 th June 2015	North Block, Kynuna, Learmonth
30 th September 2015	Mt Bingar, Tindal, Kalamunda
27 th November 2015	Paraburdoo

2.3.4 In addition, between 21st September 2015 and 29th November 2017 there will be communication systems upgrades at many existing ADS-B and VHF sites

2.4 Additional ADS-B mandates

2.4.1 On 16 August 2012, the Director of Aviation Safety, CASA made instruments for a phased requirement for all IFR aircraft to be equipped for ADS-B by 2 February 2017. This applies to all Australian aircraft and will enhance Airservices’ capability to provide safe and efficient air traffic management services.

Effective Date	Surveillance type	Mandate summary	Regulation
6 Feb 2014	Mode S	Forward Fit – Aircraft with transponder requirement (operations in Class A,B,C,E and G above 10,000ft) must be fitted with Mode S transponder with ADS-B capability (not necessarily the GNSS position source) Applies to – <ul style="list-style-type: none"> new aircraft on register from 6 Feb 2014 and new transponder installations in existing aircraft requiring a transponder after 6 Feb 2014 	CAO 20.18)
	ADS-B	Forward Fit - IFR aircraft must be fitted with ADS-B OUT Applies to – <ul style="list-style-type: none"> new aircraft on register from 6 Feb 2014 	
4 Feb 2016	Mode S	All aircraft operating at Melbourne, Sydney, Perth & Brisbane aerodromes must be fitted with Mode S transponder with ADS-B capability (to support ASMGCS)	CAO 20.18
	ADS-B	* All IFR aircraft operating within 500 Nm East/North of Perth must be fitted with ADS-B OUT (see below for expanded description)	
2 Feb 2017	ADS-B	All IFR aircraft must be fitted with ADS-B OUT	CAO 20.18

2.4.2 * 2016 – IFR for Western Australia

2.4.2.1 On and after 4 February 2016, an aircraft that is operated under the IFR in Class A, B, C or E airspace within the arc of a circle that starts 500 NM true north from Perth aerodrome and finishes 500 NM true east from Perth Airport must carry serviceable ADS-B transmitting equipment that complies with Civil Aviation Order 20.18 and Civil Aviation Order (CAO) 20.18 Amendment Instrument 2012 (No. 1).

2.4.3 The CAO amendment F2012L01739 was registered on the Federal Register of Legislative Instruments on 22 August 2012 and came into effect on 23rd August 2012.

2.5 ADS-B repeater unit

2.5.1 Airservices has several locations where the ADS-B ground station coverage is sub-optimal due to terrain constraints in remote areas. An innovative solution has been developed whereby a very small avionics unit powered by solar cell and battery will be deployed in a location that has line of sight to the area of sub-optimal coverage, as well as line of sight to the existing ADS-B ground station. This avionics unit will receive ADS-B signals from aircraft and then re-broadcast low power DF17 and DF18 messages to the existing ADS-B ground station site on 1090 Mhz, where the message is processed as if it had been received directly from the aircraft.

2.5.2 It is only intended that this solution will only be applied in low traffic density environments to solve specific problems. These currently include:

- Lord Howe Island (LHI), where terrain partially obstructs coverage (and optimal sites for an ADS-B receiver are not available due to World Heritage environmental concerns);
- (Potentially) on offshore gas platforms where the platform superstructure causes obstructions.

2.5.3 Testing in preparation for installation at the LHI site is expected to take place in early 2014.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information in this information paper

References

[AIP SUP H136/13](#)

[ADS-B mandate description](#)