International Civil Aviation Organization

ELEVENTH MEETING OF THE SURVEILLANCE IMPLEMENTATION COORDINATION GROUP (SURICG/11)

Bangkok, Thailand, 25-27 MARCH 2026

Agenda Item 8: Update on surveillance activities and explore potential cooperation opportunities

UPDATE ON NEW ZEALAND SURVEILLANCE STATUS

(Presented by New Zealand)

SUMMARY

This paper presents an update of previous yearly reports, providing information on New Zealand's Surveillance activities.

1. INTRODUCTION

1.1. This paper reflects the status of Air Traffic Management Surveillance activities in New Zealand in 2026.

1.2. Since Dec 31st, 2022, New Zealand's surveillance structure has been based on ADS-B as the *primary* surveillance source with twenty-seven terrestrial sites providing full coverage of controlled airspace. 4 MSSRs (1 new / 3 old), and an MLAT system, provide contingency cooperative surveillance back-up, and 2 PSRs (1 new / 1 old) provide a non-cooperative service where required.

2. DISCUSSION

2.1. ADS-B equipage is mandated in all controlled airspace within the NZZC (Domestic) FIR. Equipage is as follows:

2.1.1. As of March 10, 2026, Mode S transponders equipped 3375 New Zealand registered aircraft, of which 3299 or 97.74% are ADS-B capable.

2.1.2. New Zealand registered ADS-B equipped aircraft are made up of 0.65%, DO260, 0.15% DO260A and 99.2% DO260B systems.

2.1.3. 2344 or 71% of the 3299 ADS-B transponder types on New Zealand registered aircraft have been identified. Of these 43% are ADS-B out only, 27% ADS-B IN/OUT and 30% ADS-B out with PING USB for ADS-B IN. Most of the identified systems are in General Aviation (GA) aircraft. The number of identified transponder units has declined since the NZ Government/NZCAA rebate scheme ceased in early 2024, and updating of transponder types is no longer provided.

2.1.4. 75 (up from 69) aircraft have non-certified ADS-B Electronic Conspicuity (EC) devices with 9 of these having certified MODE S transponders as well.

2.1.5. There are 27 fully certified ADS-B equipped Part 102 approved drone systems, and 8 Part 102 approved Drone systems using noncertified EC devices.

2.2. The high uptake of ADS-B-IN is seen as significantly improving safety, especially for VFR GA traffic.

2.3. Three MSSRs and one PSR, which are all 30 plus years old and at end of life remain in service. Purchasing spares to keep these systems running remains extremely difficult. While a decision on replacing or removing the MSSRs is yet to be made it is likely the majority won't be replaced.

2.4. The Wide Area Multilateration (WAM) system, used for approach and enroute in the lower South Island, and the Multilateration (MLAT) system used for surface movements at Auckland, are both 16 years old, and at end of life. Replacement systems are being considered. An ATS Surveillance OPS concept document has been developed, and consultation is ongoing with Airlines and Aerodrome operators to identify the preferred option.

2.5. All data from these surveillance systems is delivered via an IP based network.

2.6. New Zealand regulatory requirements require that ADS-B surveillance is backed up by a non-GNSS contingency surveillance system covering the main trunk jet routes between Auckland (NZAA) - Christchurch (NZCH) - Wellington (NZWN) - Auckland. Additionally, consideration should be given to use of PSR for those airports with what is termed as "dense complex airspace" (i.e., airspace with over 100,000 RPT movements a year).

2.7. Three new combined MSSR/PSR3D at NZCH, NZAA and NZWN are being installed to cover the regulatory requirement mentioned in 2.6, with the first of the 3 installed in NZCH in late 2023 becoming operational in November 2025.

2.7.1. A period of extensive operational end-to-end testing of the NZCH MSSR/PSR3D allows:

2.7.1.1. Both 3NM and 5NM surveillance separation from the MSSR data within the ATMS.

2.7.1.2. PSR3D data is to be used for situational awareness only.

Fig. 1 - New NZCH MSSR/PSSR in front of the old PSR

2.7.2. The introduction of the NZCH PSR will assist with:

2.7.2.1. Identification of non-transponder equipped aircraft within controlled airspace, and,
2.7.2.2. Aid with identifying aircraft which have suffered a transponder system failure[1]

2.8. For the remaining two contingency sites:

2.8.1. The old SSR/PSR at Wellington (Hawkins Hill) has been removed and a new MSSR/PSR3D installed. The radar is currently undergoing optimization testing prior to final acceptance testing occurring.

Fig. 2 - Hawkins Hill with new radar and radome installed

2.8.2. The SSR at Auckland (Ruaotewhenua) was withdrawn from service in Feb 2025 to allow for:

2.8.2.1. The moving of ancillary equipment (microwave dishes, VHF antenna etc.) to a new stand-along mast.

2.8.2.2. The dismantling of the old MSSR radar,

2.8.2.3. The provision of a new equipment building, and upgrade to the old radar stand, and

2.8.2.4. The installation of the new MSSR/PSR3D.

2.8.3. The Auckland radar is about to commence SAT testing prior to optimization and final acceptance testing.

2.9. Airways will continue to use parts from all the dismantled MSSR radars to help keep the remaining old MSSR radars operational until a decision is made to remove them from service or replace them.

[1] The update of ESASSP to version 1.4 in the 2nd quarter of 2026 will allow PSR data on previously identified aircraft which have suffered a transponder failure to continue to be provided with a surveillance separation service.

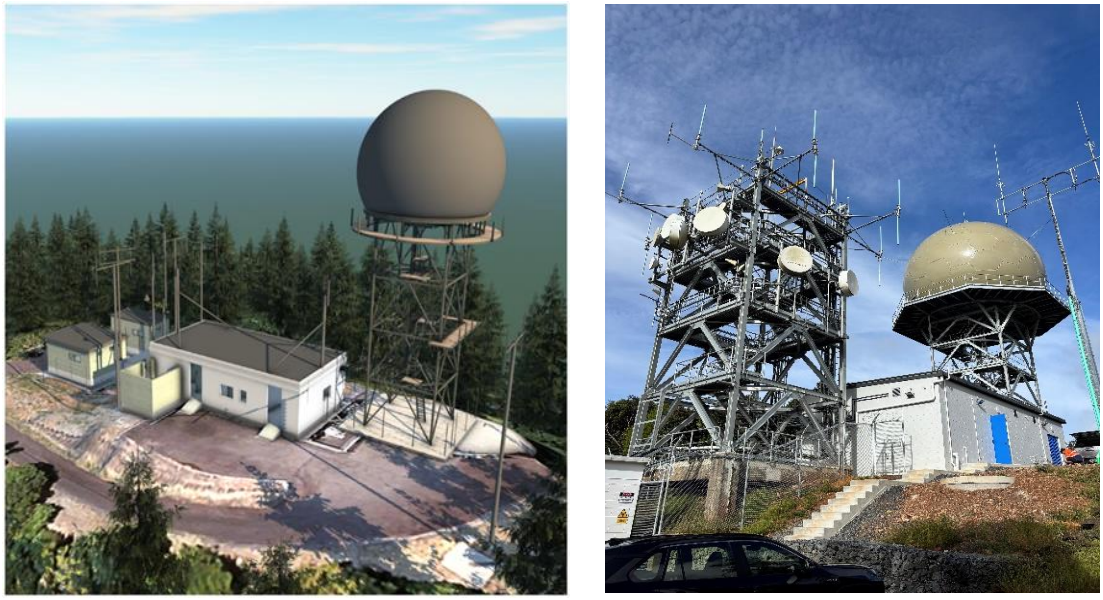

Fig. 3 - RUA – Original site with MSSR (Left) and March 10, 2026, with MSSR/PSR3D (Right)

2.10. Other Projects related to surveillance include New Zealand's continued work with Australia on the introduction of a Satellite-based augmentation system (SBAS) called the Southern Positioning Augmentation Network (SouthPan). This fully certified "Safety of Life system" is programmed to go-live in 2028 south of 20 degrees South. Coverage north of 20 degrees South is limited to LNAV-only due to ionospheric activity.

2.10.1. Open Services from SouthPan available now include:

2.10.1.1. L1 SBAS SIS and DAS within 50NM of Australia, Tasmania and New Zealand.

2.10.1.2. Dual Frequency Multi-Constellation (DFMC SBAS SIS and DAS)

2.10.1.3. PPP via SouthPan (PVS[2] SIS and DAS)

2.10.1.4. Coverage area

2.10.1.5. Service Volume now

[2] PVS is similar to DFMC SBAS in that it augments GPS L1 C/A, GPS L5, Galileo E1 and Galileo E5a signals but provides additional information that allows end users to achieve more accurate position

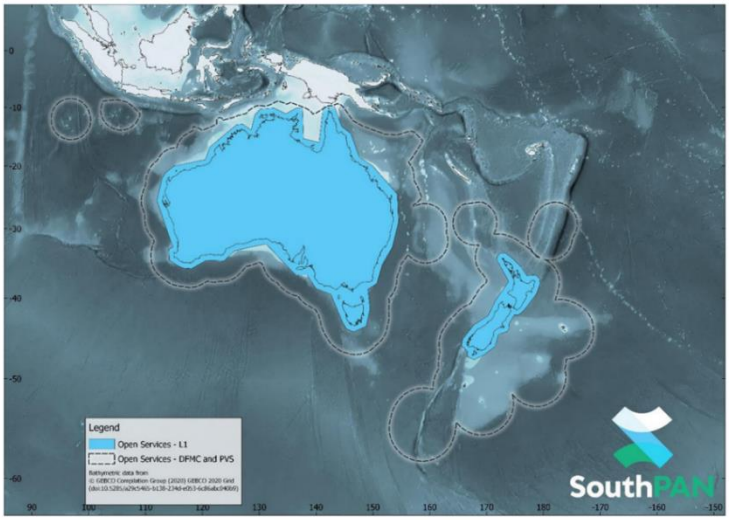

Fig. 4 - SouthPan early Open Services coverage. OS_L1 coverage mainland Australia and New Zealand. OS-DFMC and OS-PVS cover both countries Exclusive Economic Zones,

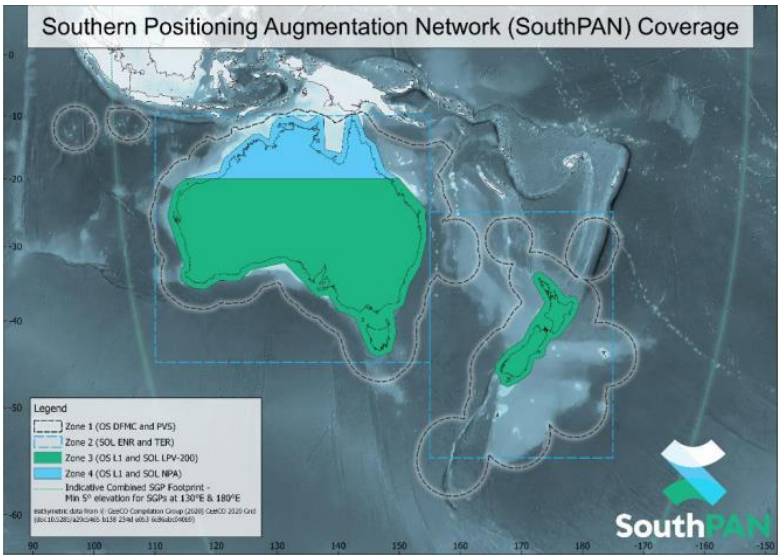

Fig 5. - SouthPan service Volume 2028

CONCLUSION

2.11 New Zealand aviation continues to remain heavily invested in the use of GNSS for surveillance and navigation. Ongoing investment upgrades by airspace users, Airways, and the New Zealand government continues to support this new technology.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matter as appropriate.

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