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AERONAUTICAL INFORMATION SERVICE,
AIRSERVICES AUSTRALIA, GPO BOX 367,
CANBERRA ACT 2601

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For DISTRIBUTION queries, contact:
Email: aim.editorial@airservicesaustralia.com

For CONTENT queries regarding this AIC, contact:
Email: car2@syd.com.au

SYDNEY KINGSFORD SMITH AIRPORT (YSSY) LIDAR WINDSHEAR ALERTING SYSTEM

1. INTRODUCTION

1.1 A LIDAR-based Low Level Windshear Alerting System (LLWAS) will become operational at Sydney Airport (YSSY).

1.2 The LIDAR windshear alerting system will provide coverage for all runways and approach corridors 3 nautical miles from every runway end. Vertically, the system encompasses a normal 3-degree glidepath.

2. LIMITATION OF THE LIDAR SYSTEM

2.1 As LIDAR is an optically based process, it performs best in clear air conditions and has operational limitations in conditions involving heavy rain, fog, or thunderstorm activity.

2.2 The purpose of the LIDAR based LLWAS is to augment aircraft capabilities such as weather RADAR. It does not replace the necessity for pilots to exercise sound judgment and appropriately use onboard systems.

2.3 Pilots encountering windshear should continue to report events as detailed in *AIP GEN 3.5 paragraph 6.3.*

3. LOCAL WIND EFFECTS

3.1 The terrain and structures surrounding Sydney Airport can induce mechanical turbulence and wind shear typically, but not exclusively, when prevailing winds are from the Northeast and the Southwest.

3.2 Wind shear is defined as a wind direction and/or speed change over a vertical or horizontal distance. It is significant when it causes changes to an aircraft's headwind or tailwind such that the aircraft is abruptly displaced from its intended flight path and substantial control action is required to correct it.

3.3 Surface winds generally are not good indicators of the winds that may be experienced during the final phase of approach. In addition to terrain induced wind disturbances, meteorological phenomena such as frontal changes, thunderstorm activity and associated microbursts represent a significant risk to the safe operation of aircraft.

3.4 For further information about windshear visit:

https://www.sydneyairport.com.au/corporate/sustainability/safety-and-security/airspace-protection

4. MICROBURST/ WINDSHEAR ALERTS

4.1 The system will alert air traffic control (ATC) in the event of a microburst or windshear event. It is critical for pilots to note that 'microburst' is used purely to differentiate alerts where the headwind loss is greater than 30 knots. Pilots should not expect the typical sequence of events in traversing a 'conventional' microburst (i.e. headwind gain and lift preceding a downdraft, followed by headwind loss and sink) to always occur when a microburst alert is issued from this system.

4.2 ATC will relay alerts from the airport air traffic control tower to aircraft that may possibly encounter the event. The ATC message will be via either a direct transmission to specific aircraft or a wide broadcast which will depend on the number of aircraft on frequency at the time and the number of aircraft that may encounter the event. Microburst/ Windshear alert includes the type of alert (i.e. Microburst or Windshear), the magnitude of the runway orientated speed difference and the location (number of nautical miles from the runway on final approach or departure, or on runway area). *AIP GEN 3.4-33 section 4* refers.

4.3 When more than one occurrence of windshear is detected on a particular runway the LLWAS will provide a consolidated alert based on a priority system which takes into consideration the severity of the alerts and the confidence level of the data source.

4.3.1 For example, if a microburst with an intensity of minus 30 knots windshear and a windshear of plus 15 knots are detected, only a microburst alert will be issued.

4.4 Wind gain and loss can occur within the same runway corridor, particularly for terrain induced wind shear. The LLWAS will assign a higher priority to a wind shear loss over a wind shear gain. If the former is issued, then pilots are reminded that they may still encounter wind gain events.

4.5 Windshear Reporting Thresholds

WIND SPEED CHANGE	GAIN	LOSS
<15 knots	No alert	No alert
15 - 30 knots	Windshear alert	Windshear alert
>30 knots	Windshear alert	Microburst alert

Note: The LIDAR alerts are rounded to the nearest 5 knots. In the case of a loss of 28 knots the system will reflect a windshear alert of 30 knots, whilst in the case of a loss of 32 knots, the system will reflect a Microburst Alert of 30 knots.

5. COMISSIONING

5.1 Commissioning will be notified by NOTAM, expected December 2024.

6. CANCELLATION

6.1 This AIC will be cancelled when the system installation has been completed and is operational.

7. DISTRIBUTION

7.1 Airservices Australia website only.