Australian Government

Australian Transport Safety Bureau

Safety advisory notice

To Australian aerodrome operators

Number: AO-2023-018-SAN-001

Released: November 2026

Visibility of runway markings on dark wet runways

Runway markings that are not visible provide no aid to pilots during take-off and landing

What happened

On 24 January 2023, a Boeing 737 aircraft landed at Gold Coast Airport, Queensland, in dark conditions with heavy rain. The aircraft touched down more than 50% of the distance along the runway, well beyond the touchdown zone, significantly reducing the available space for braking. Fortunately, the flight crew slowed the aircraft within the confines of the runway.

Why did it happen

The ATSB determined that the long landing was a result of the aircraft floating after the pilot flared the aircraft higher than recommended. During the extended flare, the flight crew were not able to see the touchdown zone markings, likely due to the wet surface obscuring the markings, so unknowingly passed beyond the touchdown zone. The runway markings, which act as a visual aid to pilots during take-off and landing, did not include any reflective materials, nor were they required to do so.

Safety advisory notice

AO-2026-018-SAN-001: Visual landing aids, such as runway markings, which become no longer visible pose a safety hazard for aircraft operations. The ATSB encourages operators of Australian aerodromes to consider including reflective materials in visual aid markings on runways that are used for night operations, particularly those where there is a reasonable likelihood of the runway also becoming wet.

Using best practice to improve marking visibility

The International Civil Aviation Organization sets the international standards and recommended practices for aerodrome markings in Annex 14 of the Chicago convention. Annex 14 includes a recommended practice that '**At aerodromes where operations take place at night, pavement markings should be made with reflective materials designed to enhance the visibility of the markings.**'

Research by the United States Federal Aviation Administration as well as road safety organisations has found that pavement markings consisting of paint only, become ineffective when wet due to the reflection of light off the water film covering the paint. Its research has also shown that safety is improved by the inclusion of reflective material in the painted markings, particularly in dark wet conditions.

Read more about this ATSB investigation: Long landing involving Boeing 737-8FE, VH-YQM, at Gold Coast Airport, Queensland, on 24 January 2023