



**Brunei Department of Civil Aviation**  
**Negara Brunei Darussalam**  
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# **ADR 022**

## Redeclaring Runway Distances

### Version 1.0

Additional information and guidance to Brunei DCA and aerodrome operators  
on reduced runway length operations

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## Foreword

This Civil Aviation Procedure ADR 022 is issued by the Department of Civil Aviation to provide additional information and guidance to Brunei DCA and aerodrome operators on reduced runway length operations, in the event of an incident or due to work in progress within the runway strip, pursuant to Brunei Aviation Requirement, BAR 14 Vol. I – Aerodrome

Organisations may use these guidelines to ensure compliance with the respective provisions of the relevant BAR's issued without compromising safety.

This manual may be updated from time to time based on suggestions received or to incorporate any changes in the guidance and procedures

### Approved by:



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**MOHAMAD AZLAN BIN MOHAMMAD JUNAIDI**

Acting Director of Civil Aviation  
Department of Civil Aviation  
Ministry of Transport and Infocommunications  
Brunei Darussalam

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# **ADR 022 REDECLARING RUNWAY DISTANCES**

## **DUE TO TEMPORARY OBSTACLES WITHIN RUNWAY STRIP**

### **A. PURPOSE AND APPLICABILITY :**

- i. In addition to the provisions of displaced threshold found in ICAO Annex 14 Vol. I and Brunei Aviation Requirements, BAR 14 Volume I - Aerodromes, this material provides additional information and guidance to Brunei DCA and aerodrome operators on reduced runway length operations, in the event of an incident or due to work in progress within the runway strip.
- ii. It is the responsibilities of the aerodrome operators to ensure robust procedures are in place for calculating reduced runway declared distances. When reduced declared distances are in operations, the aerodrome operators should ensure that the temporary markings, lighting and signs are accurately positioned and portray the reduced distances and that they are well communicated, and transferred to State's NOTAM or AIP Entry aeronautical information services for publication.
- iii. The reduced runway distances need to be carefully determined by aerodrome operators as they are used in aircraft performance calculations by the aircraft operators.

### **B. AMENDMENT**

- i. From time to time, the Brunei DCA will wish to supplement the guidance or requirements given in this publication, and this will be achieved in the form of a specific document or Information Notice. Where appropriate, such material will subsequently be included in the publication by amendment. Suggestions for improvement should be addressed to:

The Director  
Department of Civil Aviation  
Ministry of Transport and Infocommunications  
Brunei International Airport  
Bandar Seri Begawan BB 2513  
Negara Brunei Darussalam

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## **1. REDUCED RUNWAY LENGTH OPERATIONS DECISION**

The Airport Operations Manager (or his nominated deputy) is responsible for the reduced runway length operations. Operating with reduced runway distances including aircraft landing and taking-off to overfly active works on a closed section of runway can affect operational safety margins. The decision to operate runway with re-declared distances should be taken jointly by the Accountable Manager with the relevant Airport Operations Managers.

## **2. CALCULATION OF REDUCED RUNWAY DECLARED DISTANCES**

The Airport Operations Manager, AOM (or his nominated deputy) is responsible for the correct calculation of reduced runway distances in the event of an incident or due to work in progress on the runway.

A preliminary examination may show whether any obstruction can be moved within an acceptable period of time. If it is likely to take longer, the AOM (or deputy), will consider reducing the runway declared distances.

- a. As a first step, it is necessary to establish the precise location of the obstruction by measuring the distance (in meter) from the runway threshold and runway end to the nearest part of the obstruction and the distance from the runway centerline. The height should also be measured – however it may be necessary to measure the height in more than one place if the obstruction is large, e.g. B747 aircraft, and should safeguarding slopes be affected.
- b. Once the location is established, it is then possible to determine whether any useful runway distances remain. It is better, as a general rule, to use the obstructed runway for take-offs away from the obstruction or land towards the obstruction when conditions permit (although in this case the instrument landing system may be affected). If possible, landing aircraft over an obstruction is to be avoided as it takes longer to prepare the shortened runway for service, since this involves marking/lighting a temporary displaced threshold.

## **3. USE OF RUNWAY WHEN THE OBSTRUCTION IS TO THE SIDE**

If the obstruction is:-

- a. **Within a distance of 75m measured at right angles from the runway centerline.**

The runway CANNOT be used, unless declared distances are reduced, as the obstruction is within the visual strip.

- b. **Outside 75m but within 105m.**

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The runway MAY BE used as a visual strip for take-offs/landing provided that the position and height of the obstruction are the subject of a Class 1 NOTAM.

**c. Outside 105m but within 150m**

The runway CAN BE used as an instrument runway but Obstacle Clearance Limits (OCLs) must be checked, National Air Navigation/Traffic Services should be consulted as to whether the Instrument Landing System is affected, and a Class 1 NOTAM issued.

**d. Outside 150m i.e. Full Strip Width**

Unrestricted use, unless there is a penetration of the transitional surface, but OCLs and ILS should be checked as CAT I/II/III operations could be affected if the obstruction penetrates the Obstacle Free Zone (OFZ). A Class 1 NOTAM will also be required.

**4. CALCULATION OF REDUCED DECLARED DISTANCE WHEN THE RUNWAY IS BLOCKED, OR THE OBSTRUCTION IS WITHIN 75M OF THE RUNWAY CENTRELINE**

**4.1 LDA (Landing Distance Available)**

- a. The runway end is determined by measuring from the threshold up to the obstruction and subtracting 150m. In practical terms, this takes into account 60m for strip end plus a further 90m for the RESA (Runway End Safety Area)
- b. If aircraft are required to land over an obstruction, the position of the threshold for an instrument runway is established by measuring a slope of 1:50 from the highest point of obstruction down to a point on the runway centerline. A further 60m (strip end) is added and this establishes the position of the temporary threshold. **Remember that a RESA is needed.** If the obstruction is over 2m high then there is adequate space for the RESA under the 1:50 slope. In the unlikely event that the obstruction is less than 2m high, then a further 90m, or part thereof, will need to be included in the displacement.
- c. In the case of landing over an obstruction for a non-instrument runway, a slope of 1:40 can be used instead of 1:50. However the choice of slope, i.e. 1:50 or 1:40 is left to the discretion of the AOM (or deputy), depending upon the other factors at the time.

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#### 4.2 TORA (Take-off run available towards the obstruction)

- a. To determine the end of the TORA, the height of the obstruction is measured and a slope of 1:50 measured back on to the runway centerline. To this point is added 60m (strip end) and the resultant point is the end of the TORA. A minimum of 90m will be required from the strip end to the obstruction (RESA).

#### 4.3 TORA (Take-off run available away from the obstruction)

- a. If the obstruction is off the actual runway then the start of TORA can be from abeam the obstruction.
- b. If the obstruction is on the runway then sufficient displacement of start of TORA must be allowed in order to minimize the effects of engine blast on the obstruction and associated recovery workers. This is a matter for local judgement after considering the types of aircraft likely to be departing on the reduced TORA. The displacement could well be 300 to 500 meters where large aircraft are involved.

#### 4.4 EDA (Emergency Distance Available) AND TODA (Take off Distance Available)

- a. When taking-off away from the obstruction, the existing stopway and clearway are unchanged, therefore EDA and TODA are reduced by the same amount as TORA.
- b. When taking-off towards the obstruction, there is no technical reason why TODA cannot be declared right up to the obstruction. However, it is recommended that EDA and TODA be redeclared to the same distance as the reduced TORA.
- c. The position and height of the obstruction must be included in the Class 1 NOTAM.

### 5. LIGHTING AND MARKING

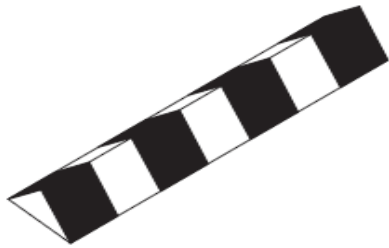
It is vital that runway lighting and marking is considered as part of redeclaring distances. Any lighting scheme must agree with the new distances/layout and be checked to ensure that no false, or incorrect, visual information is given to the pilot. Such revisions may include:-

1. New lit, or marked, temporary threshold.
2. New end of LDA or TORA/TODA.
3. Removal of coded centerline lights.
4. Switching-off, or removal of, approach lighting/or PAPIs, associated systems etc.

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**NOTE** – Air transport movements normally require lit slope indicators for night operations but it is possible to offer the runway without these, as it is the pilot’s decision whether to use the runway or not.

***Displaced Threshold Marker Board (UKCAA CAP 637 Visual Aids Handbook)***



At displaced thresholds on both side of runway.



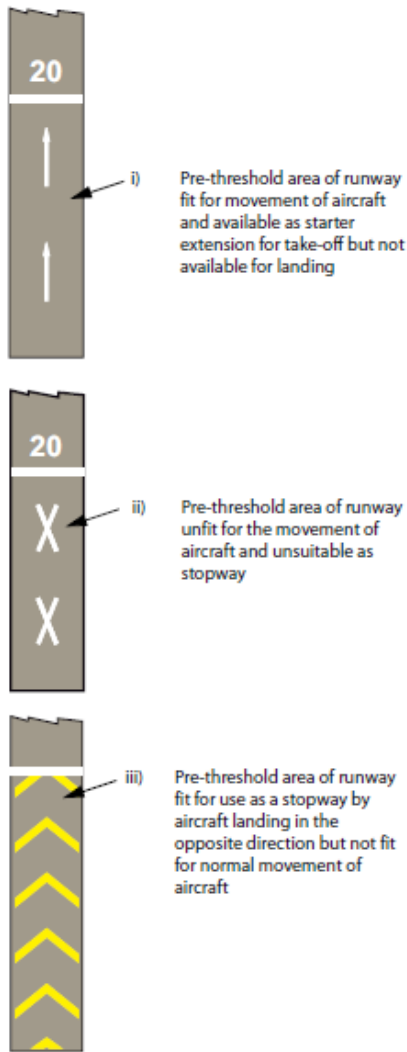
Black and white triangular box section marking displaced threshold.

***Permanent & Temporary Displaced Threshold Marking (UKCAA CAP 637)***

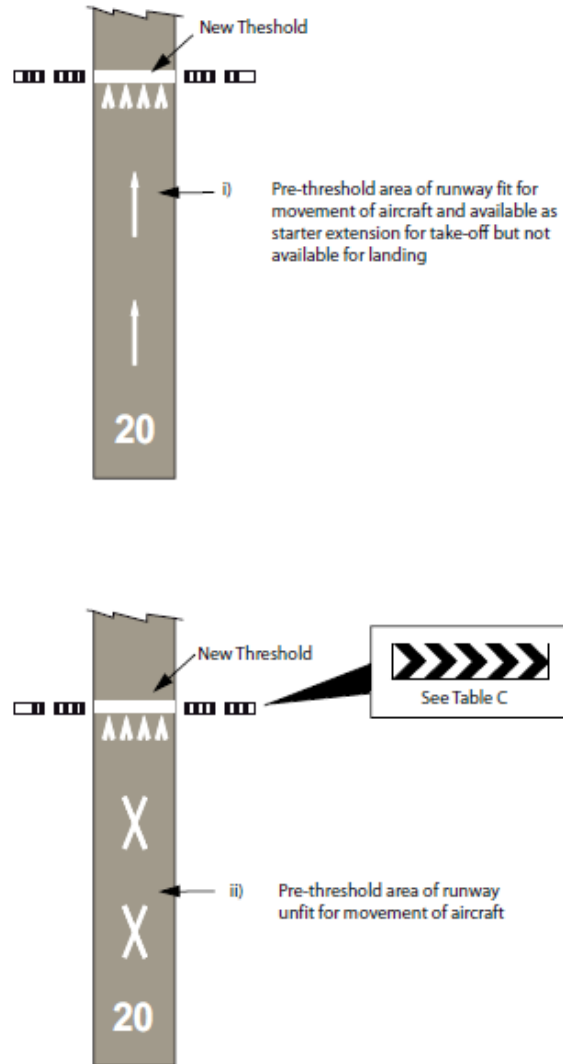
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d) Permanently Displaced Threshold  
Pre-Threshold Markings



e) Temporarily Displaced Threshold  
and Pre-Threshold Markings



## 6. PLANNING

A plan of the runway area, with accurate measured distances, should be available.

***Finally – bear in mind that redeclaring distances, and the removal of any obstruction, will always take much longer to achieve than originally anticipated!!!***