Australian Government
Department of Defence
Defence Aviation Safety Authority

AC

ADVISORY CIRCULAR 003/16

AB28592223 **Dated:** Nov 16

OBSTACLE DATA CONSIDERATIONS AND RUNWAY DISPLACED THRESHOLDS

Introduction

1. Feedback from the regulated community has identified a need for further advice and guidance on two Aerodrome related regulations, specifically:

a. DASR OFA.30(B)1. [OAREG 6.1.2.q(1)], which requires the COMAUSFLT/ COMD FORCOMD/ACAUST to determine obstacle and terrain data requirements at individual Defence aerodromes.

b. DASR OFA.35(E) [OAREG 6.1.2.t] related to the supervision of aerodrome works/maintenance and the raising of 'Notice to Airmen' (NOTAMs) for displaced thresholds.

Aim

2. This AC has two aims, the first being to provide an example that identifies the considerations when determining obstacle data requirements for a Defence aerodrome; secondly to provide a guide for aerodrome operators on 'how to' displace a runway.

Obstacle data considerations

3. Annex A provides advice to COMAUSFLT/COMD FORCOMD/ACAUST staff to assist them to critically examine the operational requirement (current and forecast) when determining obstacle data requirements and providing advice to the obstacle data service provider.

Displaced thresholds in Defence

4. The regulated community has identified problems arise when the scope of aerodrome works requires the declared distances to be amended and/or involve the withdrawal of aids such as an Instrument Landing System (ILS) or Precision Approach Path Indicator (PAPI).

5. Recent Defence Aviation Hazard Reporting and Tracking System (DAHRTS) reports have highlighted the process of temporarily displacing a runway threshold could be better, particularly in relation to hook cable maintenance.

6. **Second order effects.** A temporarily displaced runway threshold invalidates the published visibility for a straight in approach, and the obstacle free approach gradient for the landing operation may be infringed by aerodrome works. Therefore, straight in approach minima must not be used when a runway has a temporarily displaced threshold in place.

7. The Aeronautical Information (AI) Hazard Log, published on the AIS-AF website, lists the Hazard (ID 28)—'*Straight-in (SI) approach minima not available with displaced threshold*' and states the following treatment for this hazard:

> *AIS-AF will continue to educate aerodrome operators on the requirement for NOTAMs raised for displaced thresholds to include a prompt for aircrew that descent is restricted to circling minima on respective instrument approaches.*

8. AIS-AF advises Defence aerodrome operators temporarily displacing a runway threshold to include a NOTAM comment—unless other advice is provided—as follows:

a. The initial response to a planned or unplanned displaced threshold is to state[1]:
Straight-in approach minima not available for RWY XX. Circling minima AVBL
*[**or**] Published circling minima must be used for all approaches to the displaced runway.*

Note: If the aircraft is visual at the circling minima then it may make a straight in approach if it is in a position to do so.

b. After the initial response: Instrument Flight Procedure (IFP) design staff can assess and address the effect of the displaced threshold on the IFPs. This may include a change to the SI minima or just a change to the distance/altitude scale. A review of the recent NOTAMs for a displaced threshold at YWLM (see Annex B) indicated that the only real change was to the altitude/distances scales both on AIS-AF and AsA procedures. This allowed the pilot to adjust their descent profile. For RNAV approaches where the missed approach point was at the threshold, it required sliding the profile forward and compensating for the altitude.

9. Annex B provides guidance for aerodrome operators on 'how to' temporarily displace a runway threshold.

Conclusion

10. For Defence-regulated aerodromes, this AC provides additional advice and expands on guidance material (GM) contained within the *Defence Aviation Safety Regulations* (DASR). This AC should be read in conjunction with GM within the prescribed regulations.

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Annexes:
A. DASR OFA.30(B)1. [OAREG 6.1.2.q(1)] – Example – Obstacle Data Requirements for a Defence Certified Aerodrome
B. DASR OFA.35(E) [OAREG 6.1.2.t] – 'How to' temporarily displace a runway threshold

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1 This initial response as per the current HO NOTAM negates the issue of AIS-AF not having an IFP (24h/365day) NOTAM service.

DASR OFA.30(B)1. [OAREG 6.1.2.q(1)] EXAMPLE

OBSTACLE DATA REQUIREMENTS FOR A DEFENCE CERTIFIED AERODROME

INTRODUCTION

1. This example is not intended to provide a comprehensive template; rather, it identifies many of the issues that might require critical evaluation by the COMAUSFLT/COMD FORCOMD/ACAUST when determining obstacle data requirements and providing advice to the obstacle data service provider.

2. The Defence AISP—Aeronautical Information Service–Air Force (AIS–AF) produces a range of aeronautical information products (AIP) based on obstacle and terrain data for Defence Aerodromes.

3. For the range of published AIP, the COMAUSFLT/COMD FORCOMD/ACAUST should seek advice from the Defence AISP regarding the extent to which AISP products have 'verified'[2] and 'auditable'[3] data. The Defence AISP may also advise on the integrity of non-Defence sourced obstacle and terrain data that supports the production of their AIP. This advice will assist the COMAUSFLT/COMD FORCOMD/ACAUST to make an obstacle data requirement determination to ensure minimum safety requirements are achieved.

4. Other obstacle and terrain data considerations of note include:

a. the Defence Vertical Obstructions Database (VODB), managed by Air Services Australia on behalf of AIS–AF.

b. Data Product Specification Sample – CASR Part 175, managed by Air Services Australia specifies the threshold height of '100 m above ground' as the obstacle collection surface. This metric aligns with the ICAO Annex 15 obstacle collection height.

5. The following information provides an example of obstacle and terrain data requirements for the fictional Defence Certified Aerodrome Kangaroo.

6. The Defence regulations require 'Defence Certified' aerodromes or heliports to have obstacle data acquired for[4]:

a. the primary runway(s)

b. as determined by the COMAUSFLT/COMD FORCOMD/ACAUST, any secondary runway(s)

c. a minimum of 10 km circumference from the aerodrome reference point, unless COMAUSFLT/COMD FORCOMD/ACAUST determines a larger distance is required.

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2 For data to be considered 'verified' the source of the data should be known and has preferably been provided by a qualified surveyor, proven correct by a test flight, obtained from an appropriate government agency (eg Geoscience Australia, Airservices Australia) or by another supplier (eg commercial organisation) provided this data is accurate and the Defence AISP is able to use the data.

3 Data that can be thoroughly examined or inspected, particularly in relation to an approved standard measure, in order to assess its reliability.

4 DASR OFA.30.(b)1.

EXAMPLE OBSTACLE AND TERRAIN DATA REQUIREMENTS FOR DEFENCE AERODROME KANGAROO

7. **Aerodrome.** This example assumes the following pre-conditions:

a. The aerodrome is categorised as ‘Defence Certified’.

b. The key features of the aerodrome are graphically represented in Figure A–1 – Defence Certified Aerodrome Kangaroo.

8. **Defence Aerodrome Kangaroo Features – Significant Terrain and Obstacles:**

a. Terrain: Topographical information shows the following key terrain features near the aerodrome:

(1) Flat desert-like terrain north of the primary runway.

(2) Mountainous terrain south of the primary runway.

b. Obstacles: The aerodrome command and management staff is aware of the following structures that may represent a hazard to aircraft operations near the aerodrome:

(1) Urban centre SW of the secondary runway.

(2) Radio masts NW of the secondary runway.

(3) Wind turbines built on the ridgeline of mountainous terrain south of primary runway.

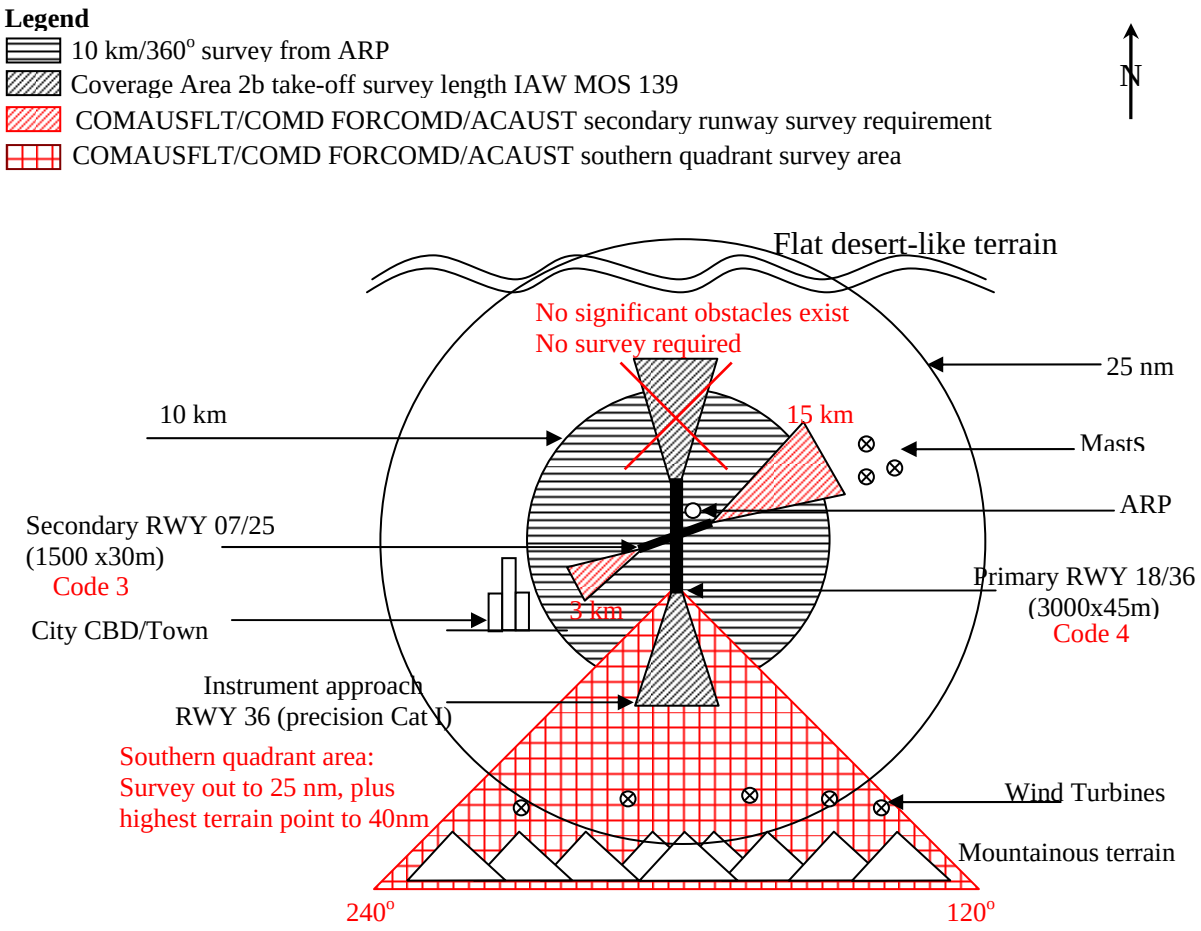

Figure A–1: Defence Certified Aerodrome Kangaroo — Defence Certified minimum survey requirement, plus COMAUSFLT/COMD FORCOMD/ACAUST determined requirements

Acceptable Means of Compliance (AMC) and guidance material (GM)[5]

9. ICAO Annex 15 (Coverage Area 2b) and ICAO Annex 4 (Type A chart) use different terminology, but both specify a take-off survey length of 10 km. ICAO Annex 15 best defines obstacle data and terrain coverage areas for surveying around an aerodrome.

ICAO Annex 15, Appendix 8, Figure A8-2, contains graphical illustrations of **obstacle** data collection surfaces and criteria used to identify obstacles in Area 2 (2a–2d). Extract follows:

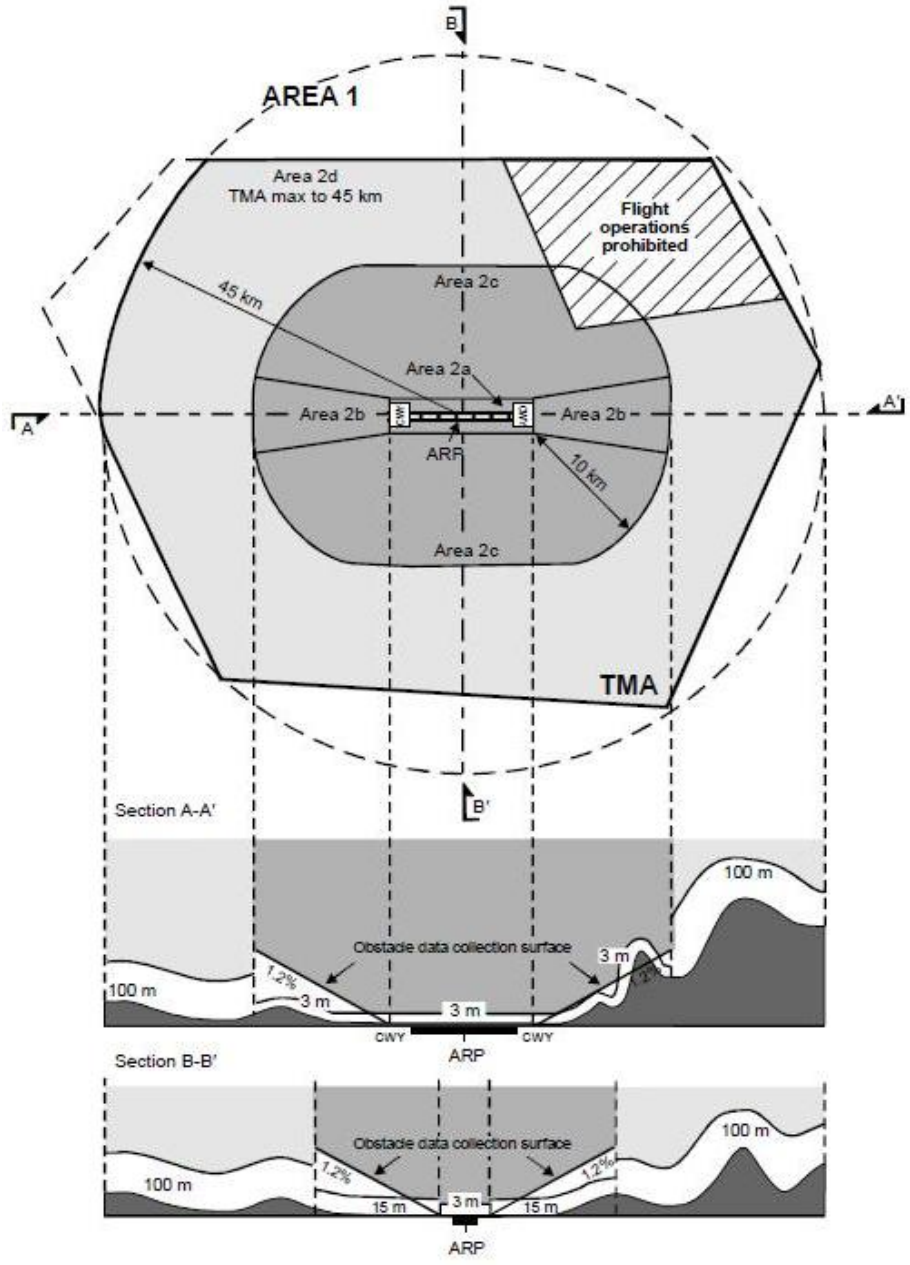

Figure A8-2. Obstacle data collection surfaces — Area 1 and Area 2

5 AMC to DASR OFA.30.B / Sect 9 Chap 1, OAREG 6.1.2.q(1)(a), paragraph 101a–c.

ICAO Annex 15, Appendix 8, Figure A8-1, contains graphical illustrations of **terrain** data collection surfaces and criteria. Extract follows:

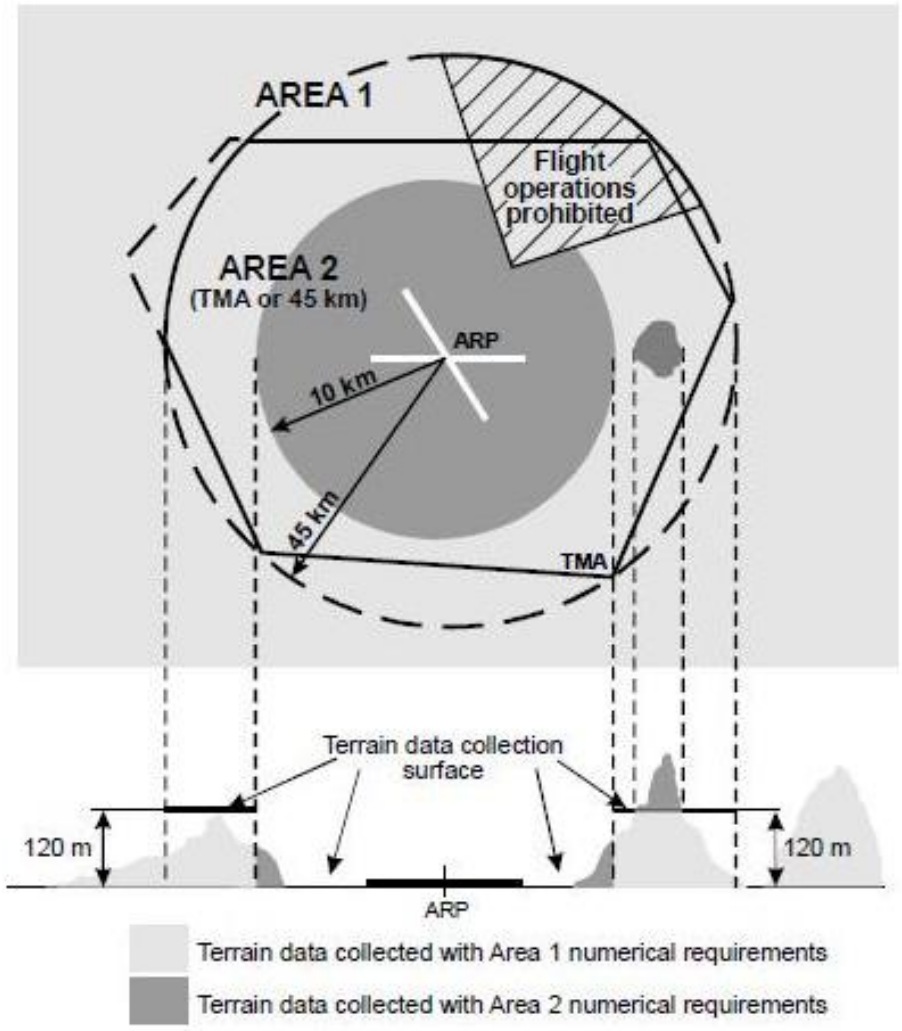

Figure A8-1. Terrain data collection surfaces — Area 1 and Area 2

10. AAP 7001.054 – *electronic Airworthiness Design Requirements Manual* (eADRM) notes the Defence Aerodrome Design Requirements are contained in Section 5, Chapter 8. The eADRM states Defence uses MOS 139 as the benchmark for aerodrome design standards, unless Defence regulation prescribes otherwise.

a. eADRM paragraph 8 states:

> ***Aerodrome Reference Codes (ARC).*** *To establish specific MOS 139 requirements to be applied, the operationally required future ARC (refer MOS 139 2.1.5) of each aerodrome movement area, considering the likely future aircraft types to use the aerodrome, should be detailed in the appropriate Aerodrome Manual. The ARC should be considered the desirable specification for the works, with reductions in safety due to deviations from MOS 139 being accepted by the OAA[6]. Decisions concerning usage of aerodromes must also consider the details within the Airfield Pavement Strength Evaluation Manual, sponsored by DSRG* [sic, since renamed E&IG].

6 Sic. DASR regulations released on 30 Sep 16 removed the OAA appointment; replaced with COMAUSFLT/COMD FORCOMD/ACAUST. eADRM is yet to be updated to reflect this change.

b. The eADRM aligns closely with MOS 139 C2.1.5.4, which states: '*For certified aerodromes, information of the Aerodrome Reference Code letter for each runway and taxiway shall be set out in the Aerodrome Manual.*'

COMAUSFLT/COMD FORCOMD/ACAUST CONSIDERATIONS

11. **Current aircraft operations.** The Kangaroo's Aerodrome Manual Approval Authorities provides the following advice to the COMAUSFLT/COMD FORCOMD/ACAUST:

a. Civil traffic: B717-200, B737-700 regular public transport (RPT).

b. Military traffic: A330-200 (KC-30A), C-17A and fast jet (F/A-18 Hornet) operations for a biennial exercise. F/A18 operations primarily occur on RWY 07 (takes off and landing), no takeoffs on RWY 25 but some (rare) landing operations to mitigate noise over CBD.

12. **Future aircraft operations.** COMAUSFLT/COMD FORCOMD/ACAUST staff is able to forecast that fast jet operations will change from 2018 with the introduction of the F-35A, and from 2022 new military aircraft operations will commence with the introduction of the 'Future Aircraft Transport Capability' ('FATC').

a. **Determining ARC for new aircraft.** Given the aeroplane reference field length, plus an aircrafts wingspan and outer main gear wheel span, one can determine the ARC for a particular aircraft using MOS 139 Table 2.1-1: Aerodrome Reference Code.

b. Alternatively, you can refer to the E&IG-maintained Aircraft Pavement Strength Evaluation Manual (APSEM) that provides a table of ARC for current and forecast military aircraft types (p166). The ARC for the civilian and military aircraft operations at Defence Certified Aerodrome Kangaroo is provided in Table A–2.

Current aircraft usage	**ARC**
B717-200	Code 4C
B737-700	Code 4C
A330-200 (KC-30A)	Code 4E
C-17A	Code 4D
F/A-18 Hornet	Code 3A
Forecast aircraft usage	**ARC**
F-35A (CTOL) (Lightening II)	Code 4A
'FATC'	'Code 4D'

Table A–2: ARC for civilian and military aircraft operations at Aerodrome Kangaroo

13. **Defence Certified Aerodrome Kangaroo Aerodrome Manual.** COMAUSFLT/COMD FORCOMD/ACAUST staff consults the aerodrome manual (AM) to confirm the primary runway reference code is '4' and the secondary runway reference code is '3'. Thus COMAUSFLT/COMD FORCOMD/ACAUST staff can be confident the primary runway is long enough to accommodate all current and forecast aircraft operations, noting the secondary runway is suitable for the current F/A-18 Hornet aircraft operations, but not future

operations when it is replaced by the F-35A.

14. The AM visual aid systems information will confirm for the COMAUSFLT/COMD FORCOMD/ACAUST if any runways are 'non-instrument'[7] or 'instrument (non-precision'[8] or 'precision'[9]) approach runways.

15. **ARC and obstacle survey requirement.** Given the AM information advising the ARC and visual aid systems for each runway the COMAUSFLT/COMD FORCOMD/ACAUST is able to determine from MOS 139 the physical dimensions of the OLS surfaces—the MOS139 prescribed standards are specified in:

a. Table 7.1-1 for approach runways.

b. Table 7.1-2 for take-off runways.

Note: Both tables specify an overall survey length of 15 km for both Code 3 and 4 runways. The take-off slope is generally the controlling surface for an OLS survey as aircraft take-off 'heavy' and land 'light'.

16. **Defence AISP.** The COMAUSFLT/COMD FORCOMD/ACAUST consults the Defence AISP for its advice on what additional obstacle or terrain data is required for survey to assist the design of approach paths, circling areas and ascertain if verifiable data exists on the locations of critical terrain and obstacles that they have taken into account in the design[10].

17. The AISP advise they lack confidence in the source for their obstacle data within the available VODB. The AISP also advises confidence in the terrain data, which is considered generally reliable, noting there is some areas where the data is inconsistent—in this case the highest terrain point. The AISP requests the VODB obstacle data be check-surveyed and that new obstacles be captured. For the instrument approach on the southern end of the primary runway the AISP requests confirmatory survey data on obstacles out to 25 nm (46.3 km) between 120–240^{o} for the design of the 10 nm and 25 nm MSA charts and out to 40 nm (74 km) to confirm an inconsistency in terrain data (for the highest terrain point) for the design of the Radar Terrain Clearance Chart.

OPERATIONAL SURVEY REQUIREMENT

18. Given the minimum regulation requirements and other considerations outlined above, the COMAUSFLT/COMD FORCOMD/ACAUST may determine that for Defence Certified Aerodrome Kangaroo the obstacle data requirements are as follows:

a. **Primary runways:**

(1) RWY 18 (Code 4, non-instrumented). A Coverage Area 2b survey is **not** required as no significant obstacles exist in this flat desert-like terrain.

(2) RWY 36 (Code 4, instrumented—precision CAT I). Coverage Area 2b survey of take-off splay out to 15 km.

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7 MOS139, Section 1.2 – Definitions: 'A runway intended for the operation of aircraft using visual approach procedures.'

8 MOS139, Section 1.2 – Definitions: 'An instrument runway served by visual aids and a non-visual aid providing at least directional guidance adequate for a straight-in approach.'

9 MOS139, Section 1.2 – Definitions: see 'Instrument Runway' for CAT I,II and III runways.

10 AIS–AF products webpage: <http://defweb.cbr.defence.gov.au/raafais/>

b. **Secondary runways:**

(1) RWY 07 (Code 3, non-instrumented). Coverage Area 2b survey of take-off splay to 15 km.

(a) Required to assure take-off and landing for F/A-18 aircraft operations.

(b) This survey requirement expires when F/A-18 will no longer operate to Kangaroo.

(2) RWY 25 (Code 3, non-instrumented). Coverage Area 2b survey for this approach-only runway to 3 km.

(a) Required to assure landing-only operations for F/A-18 aircraft.

(b) This survey requirement expires when F/A-18 will no longer operate to Kangaroo.

c. **Minimum 10 km circumference from the aerodrome reference point:**

(1) The COMAUSFLT/COMD FORCOMD/ACAUST, in consultation with the AISP, has determined a larger survey area is required:

(a) For the southern sector, between 120-240^{o}, out to 25 nm (46.3 km) capture obstacles (over 100 m above ground). For example, objects such as the wind turbines.

(b) A confirmatory survey of the highest terrain point within the southern sector, out to 40 nm (74 km).

DASR OFA.35(E) [OAREG 6.1.2.t]

'HOW TO' TEMPORARILY DISPLACE A RUNWAY THRESHOLD

References:

A. Civil Aviation Safety Authority (CASA) Advisory Circular 139-20(0): *Safe Planning and Conduct of Aerodrome Works* dated March 2007
B. CASA MOS-139, Chapter 10
C. Defence Aerodrome Method Of Working Plan (MOWP) Template of 23 Jul 14

INTRODUCTION

1. CASA AC 139-20(0) [ref A] requires the aerodrome operator to take into account the impact of any withdrawal of aerodrome facility to its users and makes clear the responsibility for ensuring aerodrome safety (during aerodrome works) resides with the aerodrome operator. The 'aerodrome operator' in the Defence context is the command and management structure supporting the aerodrome—identifiable via reference to the Aerodrome Database and the relevant *Aerodrome Manual* available therein.

Method of Works Plans

2. The aim of ref A is to assist aerodrome operators in the safe planning and conduct of aerodrome works. Planning for aerodrome works are documented in a Method of Works Plan (MOWP); see ref B:

a. Section 10.5: *Examples of NOTAM and Listing of Abbreviations*, which provides example text to illustrate how changes to aerodrome information are communicated to pilots via NOTAMs.

b. Section 10.11: *Method of Working Plans*, which defines the standards for MOWPs.

3. E&IG has developed a Defence MOWP template (ref C) to assist stakeholders to produce a MOWP—Section 2.4 discusses NOTAMs, and Annex B provides a table/format for the NOTAM text.

NOTAMs

4. The *NOTAM Originators Manual* available from the Air Services Australia (AsA) website provides detailed guidance for those who may draft and release NOTAMs.

AIS-AF

5. If the aerodrome operator is conducting 'planned works' and need to displace a runway threshold (such as was the case for WLM in Aug 16), the aerodrome operator can liaise with AIS-AF who can either:

a. issue a NOTAM with the amended distance/altitude table and minima/visibility (if required), or

b. publish new procedures on the AIS-AF website, for which SI minima would be available.

6. The following NOTAMs for WLM were produced in Aug 16 and show:

a. that AsA did 5.a, ie issued a NOTAM with the amended distance/altitude table and minima/visibility) for their procedures:

C356/16 REVIEW C219/16
AIP DEP AND APCH (DAP) EAST YWLM DUE DISPLACED THR PUBLISHED BY SEPARATE NOTAM
AIRCRAFT USING PUBLISHED DIST/ALT TABLE WILL NEED TO ADJUST PROFILE
FOR DISPLACE THR, ALTERNATIVE DIST/ALT SCALE FOR 3 DEG PATH TO DISPLACE THR AS FOLLOWS:
RNAV-Z (GNSS) RWY 30
1.4/600 2/780 3/1090 4/1410 WLMEF/1730 1/2050 2/2370 3/2690 4/3000 4.3/3100.
NDB-Z RWY 30
2.3/660 3/880 4/1200 5/1520 6/1830 7/2150 8/2470 9/2790 9.7/3000 10/3100.
NO CHANGE TO PROCEDURE MINIMA
FROM 06 060519 TO 08 240500 EST

b. that AIS-AF did 5.b, publish new procedures on the AIS-AF website, for which SI minima would be available.

C357/16 REVIEW C355/16
TERMINAL AUSTRALIA (TERMA), TERMINAL AUSTRALIA CAT C TURBOPROP -
NORTH (TERMA-CTN) AND FACILITIES AND PROCEDURES AIR COMBAT GROUP -
NORTH (FAP ACG NORTH) EFFECTIVE 26 MAY 2016
ARA RWY 30
TACAN RWY 30
STEREO RWY 30
PROCEDURES WITHDRAWN DUE DISPLACED THR.
ARA-Z RWY 30
TACAN-Z RWY 30
STEREO-Z RWY 30
TEMPORARY PROCEDURES AVBL VIA AIS-AF INTRANET. MIL ONLY
FROM 06 060524 TO 08 240500 EST

CALCULATING THE POSITION OF THE DISPLACED THRESHOLD

7. Ref A, para 10.4 and the associated diagram on p.7 contains some errors with respect to the new declared distances to be calculated for a displaced runway threshold. The diagram in Appendix 1 of this AC details the results and corrects the errors in ref A.

8. Associated guidance in Appendix 2 of the CASA Advisory Circular 139-20(0) is reproduced in Appendix 2 of this advisory circular with changes/amendments identifiable via the use of ~~strikethrough~~ or *italics*.

9. The *Displaced Threshold and STODA worksheet* (available from this link) is a spreadsheet-based tool to assist aerodrome operators apply the correct method to calculate the temporary declared distances and supplementary take off distances. Personnel who perform calculations using this worksheet are to be appropriately trained and qualified[11].

10. The steps in this worksheet need to be followed carefully, and in sequence, in order to derive a correct displacement of a runway threshold, declared distances and supplementary take-off distances. The results require peer-review or supervisor verification (this person is also to be appropriately trained and qualified) to ensure distances are correct[12].

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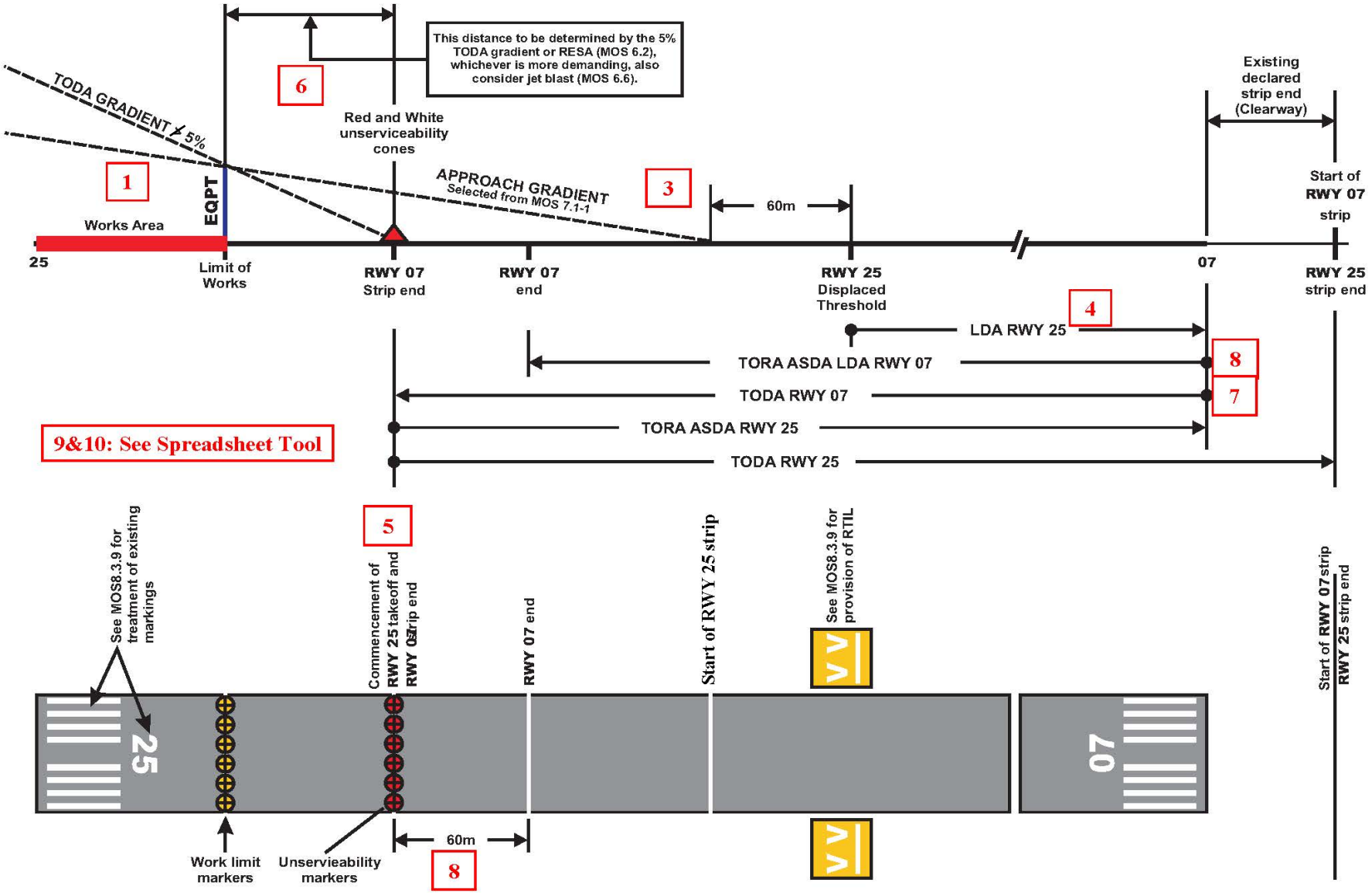
11 For example, completed: *BASO Airfield Operators Management Course* (214664)—delivered by 295SQN. PMKeyS should record successful completion of the course.

12 For example: 96WG BAEO within Air Force.

APPENDIX 1 TO
ANNEX B
AB28592223
NOV 16



CALCULATION OF DECLARED DISTANCES

FOR WORKS IN PROGRESS ON A DEFENCE RUNWAY

~~USE OF OVERLAY ON RUNWAY PROFILE TO~~ CALCULATE POSITION OF DISPLACED THRESHOLD AND REVISED DECLARED DISTANCES

The text below is a reproduction of guidance material contained in Appendix 2 of the CASA Advisory Circular 139-20(0), with changes/amendments identifiable via the use of ~~strikethrough~~ or italics.

1. Determine the chainage of the limit of the works area and the height of equipment that would be used in the area. In the case of partial runway closure due to disabled aircraft, the tail height of the aircraft may be the critical obstacle. In locating the Work Limit markers, remember to leave enough space for the movement of vehicles and plant around the works area or disabled aircraft. *[**Note:** red-numbered boxes in Appendix 1 to Annex B correlates with the paragraphs in this Appendix].*

~~2. Place the overlay over this position on the runway with the side scale (height of equipment) set to the relevant height. The overlay stays in this position.~~

Declared distances associated with take-off and landing from the displaced threshold end *(ie RWY 25)*

3. Read off the chainage where the *selected approach* gradient *from MOS 7.1-1* intersects the runway, *eg* for a code 3 [*instrumented/non-precision*] runway ~~if it is desirable to maximise the LDA, a higher gradient up to 4% is permissible~~ a 3.3*3*% gradient is required. Add 60 m to the chainage and that is the displaced threshold location. Place the temporary V-bar markers and *Runway Threshold Identification Lights (RTILs)* at this location.

4. *Landing Distance Available* (LDA) is read off from the displaced threshold chainage to the runway *25* end.

5. Next establish the chainage where aircraft commence their take-off. The requirement is for adequate clearance between the works area and where aircraft commence take-off. This *may be* dependent on the aircraft wing tip clearance or jet blast protection requirement *(MOS 6.6)*, whichever is more demanding. Use the critical aircraft to establish this chainage. When established, this chainage is the origin of the TORA, ASDA and TODA and the location for the unserviceability cones *and red lights*.

Declared distances associated with take-off and landing from the other end *(ie RWY 07)*

6. Read off the chainage where the 5% gradient intersects the runway (*the TODA Gradient is not to exceed 5%; or put another way: 'the TODA Gradient is to be equal-to or less-than'/ '≤' 5%)*. Check whether the position satisfies the RESA requirement[13] *(MOS 6.2)*. If yes, this is the temporary runway *07* strip end and the TODA gradient is 5%. If not, locate the temporary runway strip end by using the required RESA dimension. Read off the gradient to that position and that becomes the TODA gradient. *NB location of runway strip end cannot be located beyond the unserviceability markers.*

7. The distance from the take-off runway *07* end to the temporary runway *07* strip end chainage is the revised TODA.

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13 Normally 90 m in length (see MOS 6.2.26) for a non-international Code 3 or Code 4 RWY.

8. Add *[take]* 60m to *[from]* the chainage of the temporary *RWY 07* strip end to establish the temporary runway 07 end. TORA, ASDA and LDA are the same and terminate at this chainage.

9. Establish the *Supplementary take-off distances available (STODA), ie* 1.6%, 1.9%, 2.2%, ~~and~~ 2.5%*, and 3.3% (up to the gradient associated with TODA)* from the top of equipment to *the* intersect*ion with* the runway.

10. The distances from the take-off runway end *(RWY 25 or RWY 07)* to these locations are the supplementary take-off distances associated with the respective gradient.

11. *An example using the 'Displaced Threshold and STODA worksheet' is available from this link (See 'Calcs' and 'Diagram-Edinburgh' tabs). Ref A, para 7.5 advises aerodrome operators to liaise with CASA to have any safety issues resolved. CASA advice on safety issues does not extend to checking calculations for displaced thresholds and STODA's. Thus peer review or supervisor verification, by an appropriately trained and qualified person, is highly recommended to ensure calculated distances are correct.*

12. *Care must be taken in ensuring that STODA for a new obstacle does not reveal an existing obstacle. This is most likely where the new obstacle (e.g. Runway Works) is on or close to the runway. Each calculated STODA must be compared to the equivalent STODA published in ERSA or NOTAM and where a new STODA is greater than the existing STODA, the existing STODA must be declared.*

13. *When the threshold of a runway is displaced more than 300 m from the permanent threshold location, a qualified surveyor will be required to examine the resulting approach and departure OLS to ensure that new obstacles have not been revealed by the relocated threshold.*