The Bureau of Meteorology

MA8 – AWOS Installation Checklist and Metadata

Revision history

Date	Version	Description
23 August 2021	1.0	First version
11 May 2023	2.0	Second version

Effective

Version	Date
1.0	1 September 2021
2.0	1 June 2023

Applicable

Version	Date
1.0	2 December 2021
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Cover image: Bacchus Marsh Airport, Jessica Neaves, 2019

Contact us

Contact the Meteorological Authority Office: metauthority@bom.gov.au

Table of contents

1. Introduction

In accordance with MA2 Certificate of Approval Policy (Part B, MET.3) Applicants for the granting of a Certificate or Approval Holders must implement a procedure to ensure installation checklists and site metadata related to an AWOS installation are supplied to the Meteorological Authority Office.

2. Purpose and scope

This document applies to the installation of an Automatic Weather Station (AWS), and/or Threshold Anemometer(s), for use by aviation.

For the installation requirements in relation to a Runway Visual Range (RVR) System Applicants or Approval Holders should refer to MA2 Certificate of Approval Policy (Part C).

Provision of information in accordance with this document does not provide approval of an AWS or an Aerodrome Weather Information Service (AWIS) for the purpose of the definition authorised weather report of Civil Aviation Safety Amendment (Operations Definitions) Regulations 2019.

For information in relation to the Approval Process refer to MA2 Certificate of Approval Policy or contact the Meteorological Authority Office.

3. Instructions

3.1. Pre-installation checklist

An Applicant for the granting of a Certificate, or Approval Holders applying for a variation to a Certificate must complete the pre-installation checklist (refer to section 4).

An Applicant/Approval Holder should:

a. Prior to the installation of instrumentation and following consultation with the Aerodrome Owner complete the pre-installation checklist; and

b. Submit the completed checklist to the Meteorological Authority Office for review.

The Meteorological Authority Office will provide feedback on the proposed installation. Applicants or Approval Holders should note, feedback from the Meteorological Authority Office does not infer an approval for the site and/or installation of the associated meteorological instrumentation. The Aerodrome Operator in consultation with Applicant is responsible for both the final site selection and subsequent installation of the instrumentation.

3.2. Metadata form

Upon completion of the installation the Applicant or Approval Holder must complete the respective metadata form (refer to section 5) and submit it to the Meteorological Authority Office. All requested details are to be supplied, failure to do so will result in a delay to the Approval Process or termination of the application.

4. Pre-installation Checklist

Download this form before you begin.
Please download and complete with Adobe Acrobat. Send this form and any attachments to metauthority@bom.gov.au

Aerodrome/site location:	

Mandatory
Attach to this form an aerial image of the proposed installation site which clearly indicates the position (Lat/Long/Elevation) of the site in relation to the aerodrome. Distances (in metres) are to be clearly indicated to the following:
1. all aerodrome facilities and equipment; and
2. all vegetation that has the potential to impact the proposed installation.

General Site Requirements	**Y / N / NA**
Is the proposed site prone to flooding?	
Is this installation an AWOS for a helideck? [1]	
Does the proposed site comply with the General AWS requirements as stated in MA2 - *Certificate of Approval Policy*, Part D, AWOS.1?	
Is the proposed site located in a hollow?	
Is the proposed site in an area prone to fog patches?	
Has the aerodrome operator assessed the proposed site to determine the impact to the aerodrome Obstacle restriction area (**ORA**) and Obstruction-free Zone (**OFZ**)?	
Is the site located within the secure aerodrome perimeter fence? **<u>If no</u>**, will the instrumentation be installed behind or within security fencing that will allow the unobstructed movement of air?	
Indicate the primary power supply:	
Main aerodrome supply only	
Solar with battery back-up	
Main aerodrome supply with a generator back-up	
Main aerodrome supply with a battery backup	

[1] Applicants are required to submit pre-installation detail using the Helideck Metadata form

Comments on the installation site:

The Instrument Enclosure	Y / N / NA
Does the proposed instrument enclosure comply with the siting requirements for meteorological facilities stated in CASA Part 139 (Aerodromes) Manual of Standards?	
*For instrument enclosures **not** co-located with the aerodrome anemometer[2], the minimum recommended distances to the edge of the instrument enclosure apply[3]:*	

Turning areas, helicopter landing areas and aprons (taken from closest edge)	80 m
Runways (taken from closest edge)	60 m
Taxiways (taken from closest edge)	30 m

Comments on the Instrument Enclosure:

[2] The aerodrome anemometer is a standalone or remote installation, not co-located with the instrument enclosure.
[3] Bureau of Meteorology, Observation Specification 2013.1, (1997), paragraph 3.1.3

Aerodrome Anemometer	Y / N / NA
Will the anemometer be installed within the instrument enclosure?[4]	
Confirm the anemometer will be installed at the recommended height of 10 m above the mean ground level?	
Obstruction(s)	
Confirm the anemometer will be sited in open terrain?[5]	
***Note**: for isolated obstructions, or for lone large obstacles such as isolated rounded trees and towers, the effects of each of these must be considered when siting an anemometer.*	

Indicate the following clearances to the anemometer (where applicable):		
From the closest edge of a turning area and/or apron	150 m	
From the closest edge of a helicopter landing site	150 m	
From the centre line of the runway(s)	120 m	
From the closest edge of a taxiway(s)	75 m	

Comments on the aerodrome anemometer:

Runway Threshold Anemometer(s)	Y / N / NA
Will the anemometer be installed between 100 m and 300 m longitudinally from the runway threshold?[6]	
Will the anemometer be installed at a lateral distance of between 120 m and 220 m from the runway centre line?[7]	

[4] The exposure and distance requirements stated in MA2 - *Certificate of Approval Policy*, Part D, AWOS.2 shall apply to the instrument enclosure.
[5] Complies with the requirements stated in MA2 - *Certificate of Approval Policy*, Part D, AWOS.2 (2)
[6] Per the requirements stated in MA2 - Certificate of Approval Policy, Part D, AWOS.2
[7] Per the requirements stated in MA2 - Certificate of Approval Policy, Part D, AWOS.2

Confirm the anemometer will be supplying data to Airservices Australia[8]	

Comments on the runway threshold anemometer/s:

Applicant/Approval Holder representative name:	
Date:	

[8] Applicants must consult with the aerodrome operator and Airservices Australia when installing a threshold anemometer. An installation must be in accordance with the Obstacle Restriction and Limitation requirements as detailed in CASA Part 139 (Aerodromes) Manual of Standards.

5. Metadata forms

5.1. Land-Based AWOS

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Part A – Applicant or Approval Holder	
Organisation	
Address	
Contact person	
Phone/Mobile	
Email	

Part B – General details				
Site/Station Number[9]		Equipment Installation date		
Aerodrome name		Instrumentation/ Sensor SATs[10] attached	Y ☐	N ☐
Equipment Owner		Aviation ID		
State		Site security	Security fence[11] ☐ Airport ☐	
Site Location (GPS)				
Latitude/Longitude[12]		Error		
Magnetic variation		Datum definition		
Surveyed Heights				

[9] Issued by the Bureau of Meteorology
[10] The site acceptance test(s), or the *on-installation* instrumentation reports.
[11] Site not located behind or within the aerodrome security fence
[12] Position provided in decimal degrees (DD) or DMS

Station height		Barometer height		Aerodrome height	

Copy of the Certified heights[13]	Y ☐	N ☐
Copy of survey certificate attached	Y ☐	N ☐
Aerodrome Compliance		
Threshold anemometer lateral distance from the runway centre line.		
An assessment has been made to determine the impact of the AWOS to the aerodrome ORA and/or OFZ. A copy of the assessment is attached[14]	Y ☐	N ☐

Submitted Photos and Diagrams[15]					
North	Y ☐	N ☐	Site diagram[16]	Y ☐	N ☐
South	Y ☐	N ☐			
East	Y ☐	N ☐	General	Y ☐	N ☐
West	Y ☐	N ☐	Panorama	Y ☐	N ☐

Part C - Land Use and Surface & Soil Type (Select <u>only 1,</u> highest priority in each column)

Land use (Priority – Top down)	**0 – 100m**	**100m – 1km**	**1km – 10km**
City area with buildings >10m high	☐	☐	☐
City area with buildings < 10m high	☐	☐	☐
Town, population 1,000 – 10,000	☐	☐	☐
Small town, population < 1,000	☐	☐	☐
Airport	☐	☐	☐
Forest	☐	☐	☐
select from below in terms of the greatest area or extent			
Coastal or island	☐	☐	☐
Non-vegetated (barren or desert)	☐	☐	☐
Open farmland, grassland, or tundra	☐	☐	☐

[13] This certificate must be issued by a licenced surveyor or alternately certified by the Aerodrome Operator
[14] The Aerodrome Operator must provide a copy this certification.
[15] All directional photos (excluding the Panorama) are required to capture the <u>entire layout</u> of the instrument enclosure.
[16] Refer to Appendix 1 for an example of a Site Plan Diagram

select only 1 surface and 1 soil type	
Surface type	**Soil type**
Bare ground ☐	Black soil ☐
Fully covered by grass ☐	Clay ☐
Mostly covered by grass ☐	Red soil ☐
Partly covered by grass ☐	Rock ☐
Rock ☐	Sand ☐
Sand ☐	Unable to determine ☐
Unable to determine ☐	

Part D – Installed Instrumentation[17]			
Equipment/Sensor	**Equipment/Sensor Make**	**Model**	**Serial number**
Automatic Weather Station			
Instrument Shelter or Radiation Shield			
Barometer			
Temperature probe/sensor			
Humidity probe/sensor			
Anemometer			
Visibility sensor			
Ceilometer			
Present weather sensor			
Thunderstorm sensor			
Rain gauge			
Heights AGL[18]			

[17] instrumentation must comply with the stated requirements of MA2 (MET.5).
[18] means Above Ground level

Instrument Shelter or Radiation Shield – to base of Shelter or Shield					
Rain gauge – to rim height					
Communication system					
PSTN ☐	Cellular ☐	Satellite ☐	WAN ☐		
SFTP	Y ☐	N ☐			
Automatic Weather Information Service (AWIS)					
AWIS Frequency		AWIS Phone Number			
Fault Reporting					
Email		Phone			
Email		Phone			

Technician/installer name:	
Date:	

Reference or Survey Points:

Station Lat/Long	Taken at the rain gauge[19]
Station height	Taken at the rain gauge (at ground level)
Barometer Height	Taken at the static pressure head (if fitted) or at barometer pressure port
Aerodrome Height	From the Aeronautical Information Package (**AIP**), or derived from the aerodrome survey data

[19] Rain gauge is identified as the primary instrument.

5.2. Helideck AWOS

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Helideck, Rig or Ship Name				
Aviation ID				
Helideck position				
Latitude			Error	Derivation method
Longitude				
Height of helideck above mean sea level (MSL)				
Height of specific sensors/equipment				All heights above Sea Level
Anemometer	☐ above	☐ below	Height	
Instrument Shelter or Radiation Shield	☐ above	☐ below	Height	
Barometer	☐ above	☐ below	Height	
Instrumentation/equipment photos[20]				
General photo of complete installation[21] ☐				
Anemometer ☐				
Barometer ☐				
Temperature/Humidity sensor (if combined unit) ☐				

[20] depicting location / exposure
[21] where possible

Temperature sensor ☐
Humidity sensor ☐
Ceilometer ☐
Visibility sensor ☐
Instrument Shelter or Radiation Shield ☐

AWOS Equipment/Sensor[22]	**Equipment/sensor Make**	**Model**	**Serial number**
Automatic Weather Station			
Instrument Shelter or Radiation Shield			
Anemometer[23]			
Barometer			
Temperature probe/sensor			
Humidity probe/sensor			
Visibility sensor			
Ceilometer			
Present weather sensor			
AWIS			
Make/model/frequency			

Helideck owner name:	Contact email:

[22] instrumentation must comply with the stated requirements of MA2 (MET.5).
[23] provide detail of all additional anemometers installed and used for Helideck operations

Comments on the helideck installation:

Technician/installer name:	
Date:	

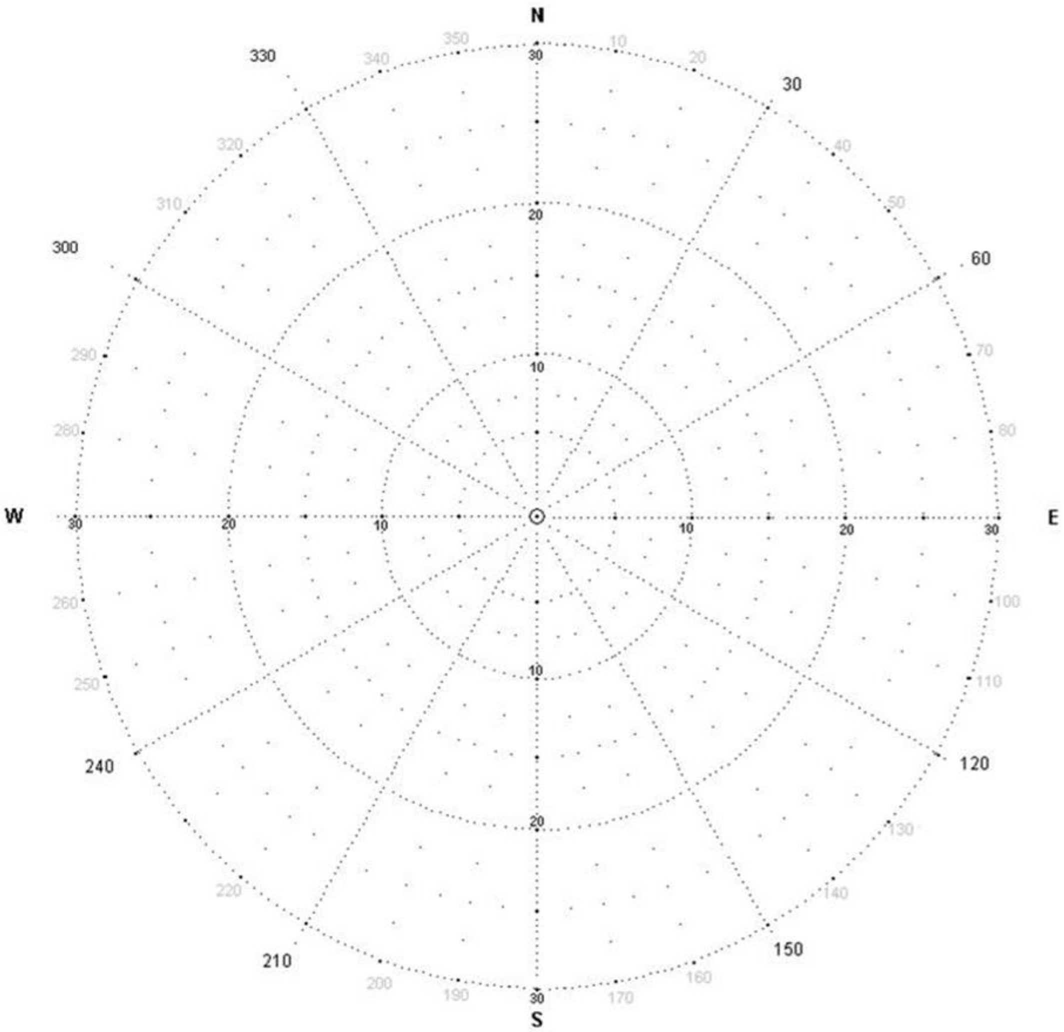
Appendix 1

Site Plan Diagram

SCALE

1cm = 3.5 metres

Station name:	
Station no:	
Date:	



KEY

Object	Symbol	Description
Diagram reference point		Primary Rain Gauge
Mast		Anemometer
Instrument Screen		Thermometer screen
Vegetation	3	Tree 3 m in height
Fence (non obstructing)	– – 1 – – –	Open sided fence 1 m in height
Artificial closed sided structure	7	Building 7 m in height

RINGS (metres)