Australian Government
Civil Aviation Safety Authority

# SUMMARY OF PROPOSED CHANGE

# Proposed amendments to Part 172 Manual of Standards (MOS) - Provision for Visual surveillance systems for aerodrome control services

Manual of Standards Part 172—Air Traffic Services

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|---|---|
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# Introduction

Part 172 of the Civil Aviation Safety Regulations 1998 (CASR) and its associated Part 172 Manual of Standards (the MOS) regulate the provision of air traffic services (ATS).

We are seeking industry and public comment on a small amendment to the MOS that will:

- enable electro-optical technology {known as visual surveillance system (VSS)} in the provision of aerodrome control services.
- clean up Chapter 3 (ATS facilities and equipment) of the MOS by removing any standards that replicate standards specified by the International Civil Aviation Organization (ICAO).
- address a gap in the standards regarding air traffic control sightline requirements in situations where a runway is newly commissioned or has been modified by being extended at an aerodrome with an existing aerodrome control facility.

VSS includes video cameras and optical surveillance systems that can either augment or improve human surveillance at existing control towers, or completely replace a traditional control tower facility. VSS is a proven technology that is in use in several countries. It can be a cost-effective solution for introducing control services at aerodromes or overcoming deficiencies in the sightlines from existing control towers.

This amendment is necessary because the existing standards in the MOS are restrictive; effectively making a traditional control tower with direct human observation as the only facility option for providing aerodrome control services.

We propose to the changes to the MOS will commence in the last quarter of 2022.

# Contents

# Reference material

## Acronyms

The acronyms and abbreviations used in this SPC are listed in the table below.

| Acronym | Description |
|---|---|
| ATS | Air traffic service(s) |
| CASA | Civil Aviation Safety Authority |
| CASR | *Civil Aviation Safety Regulations 1998* |
| ICAO | International Civil Aviation Organization |
| MOS | Part 172 Manual of Standards |
| PIR | post implementation review |
| SPC | summary of proposed change |
| VSS | visual surveillance system |

## Definitions

Terms that have specific meaning within this SPC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this SPC and the civil aviation legislation, the definition in the legislation prevails.

| Term | Definition |
|---|---|
| aerodrome control service | Air traffic control service for aerodrome traffic. (ICAO) |
| aerodrome traffic | All traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome. (ICAO) |
| controlled aerodrome | An aerodrome is a **controlled aerodrome** at a particular time if, at that time, an air traffic control service is provided to aerodrome traffic. |
| manoeuvring area | That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons. (ICAO) |
| visual surveillance system | An electro-optical system providing an electronic visual presentation of traffic and any other information necessary to maintain situational awareness at an aerodrome and its vicinity. (ICAO) |

# References

## Legislation

Legislations are available on the Federal Register of Legislation website https://www.legislation.gov.au/

| Document | Title |
|---|---|
| Part 172 of CASR | Deals with ATS providers and ATS standards |
| Part 172 MOS | Prescribes technical and operational standards applicable to the provision of ATS |

## International Civil Aviation Organization documents

International Civil Aviation Organization (ICAO) documents are available for purchase from http://store1.icao.int/

| Document | Title |
|---|---|
| Annex 11 to the Chicago Convention | Air Traffic Services. Annex 11 pertains to the establishment of airspace, units and services necessary to promote a safe, orderly and expeditious flow of air traffic. Its purpose, together with Annex 2 – Rules of the Air, is to ensure that flying on international air routes is carried out under uniform conditions designed to improve the safety and efficiency of air operation. |
| ICAO Doc. 4444 | Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM). ICAO Doc 4444 is complementary to and expands on the Standards and Recommended Practices contained in Annex 2 — Rules of the Air and in Annex 11 — Air Traffic Services. |

# Purpose and scope of the proposed amendments

## Background

Control towers can be found at many larger aerodromes. Their prominence above an aerodrome's skyline is necessary to give local air traffic controllers clear unobstructed views of the aerodrome surfaces and surrounding airspace.

Control towers must be designed and positioned with careful consideration of the viewing needs of the controllers. Chapter 3 (ATS facilities and equipment) of the MOS has specific requirements for ensuring these needs are met. Unfortunately, several instances have occurred where a new runway or aerodrome facility has been commissioned and it has been later found that observational capabilities of the existing control tower are no longer suitable. Despite the lack of relevant standards (which is being addressed in this consultation), this is not acceptable from a safety perspective. The ATS provider self-identified problems with the sightlines along the new runways and has been working with CASA on appropriate solutions.

Replacing a control tower or modifying the existing control tower (e.g., increasing its height) is an option, albeit an expensive one. Therefore, other options are being explored, including the use of electro-optical systems called a visual surveillance system (VSS).

Several countries around the world, initially led by Sweden, are using VSS to either supplement the capabilities of a traditional control tower or as a complete replacement. For example, video imagery of obscured parts of an aerodrome can be displayed in the control tower to assist controllers perform their duties. Going a step further, some traditional control towers have been completely replaced by a more cost-effective solution of a comprehensive VSS in a room without direct views of the aerodrome. London City Airport is an example of an aerodrome where aerodrome control services are entirely provided with the use of VSS.

The European Aviation Safety Agency (EASA) validated the technology through extensive trials and VSS is now recognised by the International Civil Aviation Organization (ICAO) as a means for meeting the observational requirements for aerodrome control services.

## Issue

The control tower standards in Chapter 3 of the MOS, require direct human observation from traditional control towers. These standards inhibit any consideration of VSS for addressing observational issues or a way to address future control tower needs.

Also, while the MOS deals with the sightline requirements for new control towers, it does not deal with situations where a new runway or facility is constructed at an aerodrome and the resulting sightlines or views from the existing control tower are inadequate or insufficient. CASA believes the situations are closely comparable and should be similarly addressed.

Finally, CASA has been working with industry on a comprehensive post implementation review (PIR) of CASR Part 172 and the MOS and the review has found considerable duplication between the standards in the MOS and existing ICAO standards. Having multiple versions of the same standard in different documents increases the opportunity for error and is inefficient.

## Proposal 1

CASA is proposing a comprehensive amendment to Chapter 3 of the MOS to achieve the following:

- Remove or amend any reference in the MOS that exclusively requires direct human observation for the provision of ATS at an aerodrome.
- Introduce standards in the MOS enabling the use of VSS for the provision of aerodrome control services at controlled aerodromes.
  - The proposed standards are consistent with the standards in ICAO Doc. 4444.
- Extend the requirements that apply to control towers first commissioned after 1 July 2000 so that they also apply to a runway that is commissioned or modified after 1 July 2000 to the extent that existing sightlines are degraded.
  - The requirements include the aerodrome control facility having:
    - a view of all runway ends and taxiways
    - unobstructed sightlines to the manoeuvring area, the approach lighting system or graded portion of the runway strip
    - the ability to detect movement of a departing aircraft as soon as possible after take-off is commenced, but with an upper time limit of 5 seconds.
- Delete those Chapter 3 standards that replicate an equivalent standard specified in Chapter 6 of Annex 11 to the Chicago Convention.
  - By this action and through the arrangements in Division 172.C.3 of CASR, the relevant references in Annex 11 would be as binding as a MOS standard.
- Delete subsection 3.1.4 of the chapter because matters in this subsection are already dealt with by regulations 172.080 (compliance with operations manual) and 172.145 (safety management system - SMS) of CASR and in Chapters 2 (operations manual) and 6 (SMS) of the MOS.

Please see Appendix A for a tabular comparison between the current Chapter 3 standards, the proposed standards and the equivalent standards in Chapter 6 of Annex 11. The VSS standards within ICAO Doc. 4444 are included for comparison with the proposed standards for the MOS.

## Proposal 2

For this consultation, CASA originally intended to omit significantly more of Chapter 3 of the MOS, than is proposed in Proposal 1. However, Division 172.C.3 of CASR only identifies the MOS and Chapter 6 (Air traffic services requirements for **communications**) of Annex 11 as the applicable standards for facilities and equipment. This prevents CASA from referencing other facility and equipment standards in Annex 11 (for example the meteorological display requirements in Chapter 7) and any of the facility and equipment standards in ICAO Doc 4444 (for example, the lighting control requirements in section 7.16).

To achieve the overall PIR objective of eliminating duplication between MOS and ICAO documents, CASA proposes the following:

- Amend Division 172.C.3 of CASR by extending the scope of relevant ICAO standards to include the facility or equipment standards specified in *any* chapter of Annex 11 (not just Chapter 6) and any facility and equipment standards mentioned in ICAO Doc. 4444.

- As a consequential amendment, omit as much of the remaining sections of Chapter 3 of the MOS as an amended Division 172.C.3 of CASR allows.
  - The details of this amendment would be consulted in the exposure draft consultation for the broader PIR activity.

## About the term *control tower*

One of the matters leading to this proposed amendment was concern that references to 'control tower' implied a physical control tower with a cab at the top. In initial development work for the amendment, CASA considered replacing 'control tower' with phrases along the lines 'facility for the provision of aerodrome control services'.

However, CASA now believes it is not necessary to replace the phrase. Based on the Annex 11 definition for aerodrome control tower - 'A unit established to provide air traffic control service to aerodrome traffic' - CASA is comfortable that 'control tower' is a generic term for anything (facility, building or unit) used to deliver aerodrome control service (not just a control tower building with a cab).

## Previous consultations

As mentioned earlier, a comprehensive PIR on Part 172 and the MOS is underway with the active participation of Airservices Australia and Civil Air (the air traffic controllers' association). The matters covered in this SPC reflect discussion and tentative proposals developed during PIR meetings.

## Three consultation activities

This consultation is one of three separate consultation activities taking place as an outcome of the PIR:

a. A separate fast-tracked amendment to the MOS to ensure the standards in this MOS do not inhibit the use of digital tower/remote tower services for the provision of aerodrome control services (this consultation).
b. A separate consultation process to address matters concerning independent visual approach (IVA) to parallel runways.
c. The proposals in this policy proposal, which will deal with the remaining outcomes of the PIR, other than those covered in activities a. and b.

## Impact on industry

### Introducing VSS and greater reliance on ICAO standards

CASA estimates that introducing VSS has the potential to reduce the cost of introducing aerodrome control services at an aerodrome. There is no obligation to replace existing control towers or introduce VSS; it is merely another option for facilitating aerodrome control services.

Removing the standards from the MOS and relying instead on an equivalent standard in an ICAO document has no effect on compliance requirements. Based on the hierarchical order for

applicable standards specified in Part 172, ATS providers will have the same compliance obligation for a particular standard, whether specified in the MOS or a relevant ICAO document.

### Extending the new tower requirements to new *and* modified runways

CASA assesses that extending the new tower requirements to new and modified runways will have an impact on ATS providers, but only at controlled aerodromes (those with local air traffic control services), where they are planning or introducing new runways and extensions to existing runways. Specifically, an ATS provider will have to ensure there are adequate sightlines and visual observation capabilities for a new runway\ or runway extension at an aerodrome where they are the provider. Meeting the requirements may require a new or modified control tower or the use of VSS (or similar) technology.

Paragraph 3.1.2.1 of the MOS sets specific sightline and controller visual observation requirements for control towers first commissioned after 1 July 2000.[1] The MOS standard never envisaged the situation of an aerodrome with an existing control tower where a manoeuvring area surface (runway etc) is newly constructed or extensively modified. Yet this has occurred at several aerodromes, where a new runway was constructed, and subsequently it was found that the existing control tower did not have the sightline and control visual observational capabilities for the new runway for inadequate when compared with the capability for the existing runway.

CASA considers it reasonably arguable and logically justifiable from a safety perspective that a new runway or runway extension at an existing aerodrome should be subject to the same sightline and control visual observational criteria as is required when a new control tower is planned. Otherwise, it is foreseeable there may be adverse effects on operating safety (e.g., ATC is unable to visually scan the runway for obstructions) and efficiency (e.g., there is an excessive delay in ATC visually detecting that an aircraft has commenced take off roll and hence a knock-on delay effect on following aircraft).

The proposed changes to the sightline requirements are not aimed at preventing aerodrome developments but aim to ensure that ATC sightline and detection requirements are adequately dealt with during the planning and construction of new facilities.

## Safety risk analysis

CASA believes introducing the ability to use VSS in Australia has a low safety impact. The technology has been extensively trialled and is in operational use in several countries including Sweden, Norway and the United Kingdom. VSS is internationally recognised as a means for achieving the sightline requirements for aerodrome control facilities, with ICAO Doc. 4444 setting appropriate standards.

Therefore, enabling VSS in Australia does not introduce a novel capability with broadly unforeseeable risks. Nevertheless, an ATS provider contemplating the use of VSS would have to meet its safety management system requirements for safely introducing and using the technology for the provision of air traffic services.

Extending the new tower sightline requirements to new and modified runways addresses an unforeseen gap in aviation safety standards. Taking this action provides underpinning regulatory

[1] The requirements applied for the new control towers at Adelaide, Broome and Melbourne.

support for the corrective action being taken at affected aerodromes and will ensure that sightline requirements are a primary consideration for any new runway develops.

## Regulation impact statement

CASA will prepare and submit a Preliminary Assessment for the proposed changes to the Office of Best Practice Regulation (OBPR) and will prepare a Regulation Impact Statement if required by the OBPR.

## Closing date for comment

CASA will consider all comments received as part of this consultation process and incorporate changes as appropriate. Comments on the draft *Part 172 (Air Traffic Service Providers) Amendment Manual of Standards 2022* should be submitted through the online response form by close of business 24 October 2022.

# Appendix A

# Tabular comparison of current standards in Chapter 3 of the Part 172 MOS with proposed changes

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| 1 | **Chapter 3: ATS Facilities and Equipment**<br>**Section 3.1 General**<br>**3.1.1 Introduction**<br>3.1.1.1 This standard sets out the standards for the design, siting, construction, equipping and maintenance of ATC facilities. Further information is contained in an Advisory Circular. | **CHAPTER 3—ATS FACILITIES AND EQUIPMENT**<br>**3.01 Scope of Chapter 3**<br>This Chapter:<br>(a) is made for regulation 172.095 of CASR; and<br>(b) sets out standards for facilities and equipment used to provide an air traffic service.<br>**3.02 Definitions**<br>In this Chapter:<br>***ICAO Doc. 4444*** means *Procedures for Air Navigation Services — Air Traffic Management* (Doc 4444, PANS-ATM) approved and published by decision of the Council of the International Civil Aviation Organization, as in force from time to time, subject to the differences mentioned in Gen 1.7 of Part 1 of the AIP.<br>***visual surveillance system*** has the same meaning as in ICAO Doc. 4444. | Item 1 introduces the chapter. It uses drafting conventions including numbering that conforms to CASA legislative drafting standards for manuals of standards |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| 2 | **3.1.2 Control Towers**<br>3.1.2.1 **Visibility.** A control tower first commissioned after 1 July 2000, must enable the controller to have:<br>(a) adequate visibility to all the manoeuvring area and airspace which are under the controllers' area of responsibility;<br>(b) a view of all runway ends and taxiways, with suitable depth perception, (refer Advisory Circular);<br>(c) maximum visibility of airborne traffic patterns with primary consideration given to the view from the aerodrome control position(s);<br>(d) unobstructed lines of sight from the control tower eye level (refer Advisory Circular) to:<br>(i) the manoeuvring area of the aerodrome;<br>(ii) the runway approach lights and/or graded areas at ground level for distance of 300 M from the threshold | **3.03 Control towers**<br>Visibility standards<br>(1) A control tower for a controlled aerodrome must enable a controller to maintain visual observation, achieved through direct out-of-the-window observation, or indirect observation using a visual surveillance system that meets the requirements of section 3.05, of:<br>(a) all parts of the manoeuvring area at the aerodrome for which the controller has responsibility; and<br>(b) the runway strips associated with the areas mentioned in paragraph (a); and<br>(c) the parts of any service roads that are within 150 m of the areas mentioned in paragraph (a); and<br>(d) any other parts of the aerodrome movement area for which the controller has responsibility; and<br>(e) the airspace for which the controller has responsibility, including flight operations on | The ICAO definition for control tower is 'A unit established to provide air traffic control service to aerodrome traffic'. CASA is of the view that 'control tower' does not imply a building, but anything used to provide the service. Hence CASA is not proposing to replace the word 'control tower'. |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| | along the extended centreline, then upward and outward within the take-off climb area normally at an angle not less than 2.5 degrees;<br>(iii) the first 150 M of any fire routes service roads adjacent to the areas mentioned in (a) and (b) above;<br>(iv) sections of aprons used as a taxiway to a line, at ground level, 15 M from the apron edge, towards the building line;<br>(e) sufficient visual resolution of all aerodrome movement areas for which he/she has a responsibility; | and in the vicinity of the aerodrome.<br>**Note** See the definition of ***manoeuvring area*** in the Act and the Part 139 Manual of Standards. The terms ***runway strip*** and ***movement area*** are defined in the CASR Dictionary. | |
| 3 | (f) ability to detect movement of a departing aircraft as soon as possible after it has commenced its take-off run; response times must be kept below 4 seconds, although an upper limit of 5 seconds may be approved in exceptional circumstances. | **3.04 Detecting movement of departing aircraft**<br>(1) Subsection (2) applies in relation to a control tower for a controlled aerodrome, if:<br>(a) the control tower was first commissioned after 1 July 2000; or | As discussed in the summary of proposed change, 3.04 extends the detection of movement requirements for control towers first commissioned after 1 July 2000 to include new runways or runways modified on or after 1 July 2000. |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| | | (b) a runway at the aerodrome was commissioned after 1 July 2000; or<br>(c) both of the following apply:<br>(i) a runway at the aerodrome was modified after 1 July 2000;<br>(ii) as a result of the modification, a controller's ability to maintain visual observation of the runway, or to detect the movement of a departing aircraft after the aircraft has commenced its take-off run, has been degraded.<br>(2) The control tower must enable a controller to detect the movement of a departing aircraft:<br>(a) as soon as possible after the aircraft has commenced its take-off run; but<br>(b) no later than 5 seconds after the take-off run commences. | |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| 4 | 3.1.2.2 In addition, procedures or facilities are required to ensure:<br>(a) protection from glare, reflection and noise;<br>(b) unobstructed view from an existing control tower cab. | **3.03 Control towers**<br>…<br>Glare, reflection and noise<br>(2) The control tower must be designed, oriented and equipped to minimise glare, reflection and noise. | For ease of comparison, the proposed replacement for 3.1.2.2 is not in its intended numeric sequence. In the revised MOS, paragraph 3.03 (2) would immediately follow paragraph 3.03 (1).<br>The intent of the existing subparagraph 3.1.2.2 (b) would be covered by proposed 3.03 (1). |
| 5 | 3.1.2.3 **Communication.** Each control tower must contain:<br>(a) an appropriate power supply to service the facilities identified in this Section;<br>(b) facilities capable of two-way communications with aircraft, vehicles and persons within its area of responsibility;<br>(c) facilities capable of providing two-way communications:<br>(i) between operational positions within the control tower;<br>(ii) with adjacent ATS units;<br>(iii) with aerodrome rescue and fire fighting services; | No equivalent as the related matters are dealt with in Chapter 6 of Annex 11 | The Annex 11 requirement for capability of continuous and rapid communication implies a requirement for an appropriate power supply.<br>6.1.1.3 When direct pilot-controller two-way radiotelephony or data link communications are used for the provision of air traffic control service, recording facilities shall be provided on all such air-ground communication channels.<br>6.1.5.1 Air-ground communication facilities shall enable direct, rapid, continuous and static-free two-way communications to take place between an aerodrome control tower and appropriately equipped aircraft operating at any distance within 45 km (25 NM) of the aerodrome concerned. |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| | (d) a means of alerting emergency services;<br>(e) a means of recording air/ground/air and ground/ground communications;<br>(f) AFTN terminal or other means to provide information normally conveyed by AFTN; | | 6.2.2.1.4 An aerodrome control tower, in addition to being connected to the flight information centre, the area control centre and the approach control unit as prescribed in 6.2.2.1.1, 6.2.2.1.2 and 6.2.2.1.3, shall have facilities for communications with the associated air traffic services reporting office, when separately established.<br>6.2.2.2.2 An approach control unit and an aerodrome control tower shall have facilities for communications with the following units providing a service within their respective area of responsibility:<br>a) appropriate military units;<br>b) rescue and emergency services (including ambulance, fire, etc.);<br>c) the meteorological office serving the unit concerned;<br>d) the aeronautical telecommunications station serving the unit concerned;<br>e) the unit providing apron management service, when separately established. |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| 6 | (g) binoculars; | No equivalent | CASA is of the view that sightline and movement detection requirements (as proposed by 3.02 and 3.03) are the operational objective. The means to achieve this should be up to the ATS provider. |
| 7 | (h) signal lamp, with white, red and green functions. | **3.03 Control towers**<br>…<br>Signal lamp<br>Signal lamp<br>(3) The control tower must have a signal lamp with white, red and green functions.<br>**Note** Also, subregulation 172.095 (3) of CASR provides that equipment and facilities mentioned in Chapter 6 of Annex 11 to the Chicago Convention must meet the standards of that chapter. | For ease of comparison, the proposed replacement for 3.1.2.3 (h) is not in its intended numeric sequence. In the revised MOS, paragraph 3.03 (3) would immediately follow paragraph 3.03 (2). |
| 8 | No equivalent | **3.05 Visual surveillance systems providing aerodrome control service**<br>An ATS provider may use a visual surveillance system, in the | A completely new MOS entry that sets the standard for visual surveillance system. |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| | | provision of aerodrome control service, to perform a function listed in Section 7.1 of ICAO Doc. 4444, only if the visual surveillance system meets the standards mentioned in Chapter 7.12 of ICAO Doc. 4444.<br><br>**Note 1** Section 7.1 of ICAO Doc. 4444 lists functions of aerodrome control towers. Under subregulation 172.075 (1) of CASR, an ATS provider must ensure that any traffic service that it provides is provided in accordance with the procedures and rules set out in ICAO Doc. 4444, as varied by Gen 1.7 of Part 1 of the AIP.<br>**Note 2** ***aerodrome control service*** has the same meaning as in Annex 11 (see the definition of the term in the CASR Dictionary). | Section 7.1 of ICAO Doc. 4444, among other things, covers such matters as:<br>• Aerodrome control towers issuing information and clearances to aircraft under their control to achieve a safe, orderly and expeditious flow of air traffic on and in the vicinity of an aerodrome.<br>• Requiring aerodrome controllers to maintain a continuous watch on all flight operations on and in the vicinity of an aerodrome as well as vehicles and personnel on the manoeuvring area by visual observation, augmented when available by an ATS surveillance system.<br>• Requiring visual observation shall be achieved through direct out-of-the-window observation, or through indirect observation utilizing a visual surveillance system which is specifically approved for the purpose by the appropriate ATS authority.<br>• Where parallel or near-parallel runways are used for simultaneous operations, recommending that individual aerodrome controllers should be |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| | | **Note 3** As a system that processes or displays air traffic control data, a visual surveillance system is a ***telecommunication service*** as defined in regulation 171.012 of CASR. A visual surveillance system therefore is also regulated under Part 171 of CASR as a telecommunication service, including how CASA approves a person to be a provider of the service, and obligations of providers. | responsible for operations on each of the runways.<br>Section 7.12 of ICAO Doc. 4444 in full states:<br>**7.12 USE OF A VISUAL SURVEILLANCE SYSTEM IN AERODROME CONTROL SERVICE**<br>**7.12.1 Capabilities**<br>7.12.1.1 Visual surveillance systems used in the provision of aerodrome control services shall have an appropriate level of reliability, availability and integrity. The possibility of system failures or significant system degradations, which may cause complete or partial interruptions of service, shall be assessed and taken into account in the definition of the level of service provided in order to ensure that there is no degradation in the safety level of the services rendered. Backup facilities or alternative operational procedures shall be provided.<br>*Note.— A visual surveillance system will normally consist of a number of integrated elements, including sensor(s), data transmission links, data processing systems and situation displays.* |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| | | | 7.12.1.2 Visual surveillance systems should have the capability to receive, process and display, in an integrated manner, data from all connected resources.<br>**7.12.2 Functions**<br>7.12.2.1 When approved by and subject to conditions prescribed by the appropriate ATS authority, visual surveillance systems may be used in the provision of aerodrome control service to perform the functions listed in 7.1.<br>7.12.2.2 The level of service to be provided shall be commensurate with the technical capabilities of the system. |
| 9 | 3.1.2.4 **Displays.** A control tower must have the following displays:<br>(a) flight data displays (e.g. flight progress boards); | **3.06 Displays for control towers**<br>(1) A control tower must have the following displays:<br>(a) flight data displays (for example, flight progress boards); | For ease of comparison, the proposed replacement for 3.1.2.4 is not in its intended numeric sequence. In the revised MOS, the paragraphs and subparagraphs in subsection 3.06 would follow normal numeric order. |
| 10 | (b) meteorological displays which meet the accuracy criteria specified in Annex 3 and which provide at least the following information:<br>(i) wind velocity; | (b) meteorological displays which provide at least the following information:<br>(i) surface wind;<br>… | Regarding the previous note to 3.1.2.4 (b)(i): CASA is of the view that only the third sentence has substantive application to a Part 172 provider – specifically to meet the requirements of para 7.1.4.3 of Annex 11. Matters about mean direction and mean speed and the |

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| | *Note The meteorological displays must show mean speed and mean direction of the surface wind. Surface wind observations are to be representative of the conditions along the runway and near the touchdown zones. If more than one sensor is used, the displays must identify the sensor being utilised for the observation.* | (2) For the purposes of subparagraph (1) (b) (i), if more than one surface wind sensor is used at the aerodrome, the displays must identify the sensor being used for the observation. | measurements being representative of the conditions along a runway and near the touchdown zone apply to the met information provider — either the Bureau of Meteorology (BoM) or the aerodrome operator – who would be regulated by the BoM.<br><br>Accordingly the proposal is to replace the note with 3.06 (2). |
| 11 | (ii) barometric pressure;<br>(iii) temperature. | (ii) barometric pressure;<br>(iii) temperature; | No change compared to the existing standard. |
| 12 | No equivalent | (iv) if the aerodrome has runway visual range equipment—the current runway visual range values; | (iv) is an initial proposal that reflects the fairly recent introduction in Australia of RVR services. |
| 13 | (c) operational data displays for:<br>(i) other significant weather information;<br>(ii) NOTAMS;<br>(iii) handover/takeover;<br>(iv) essential aerodrome information;<br>(v) relevant maps and charts; | (c) operational data displays for the following:<br>(i) other significant weather information;<br>(ii) NOTAMs;<br>(iii) handover/takeover;<br>(iv) essential aerodrome information;<br>(v) relevant maps and charts; | No change compared to the existing standard. |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
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| | d) a time display at each operational position. | (d) a time display at each operational position. | |
| 14 | 3.1.2.5 Switching, monitors and controls for aerodrome equipment. A control tower must have appropriate switching, monitors, and controls for aerodrome lighting equipment for which the control tower has responsibility, including:<br>(a) runway lighting;<br>(b) approach lighting;<br>(c) high intensity approach and runway lighting;<br>(d) taxiway lighting;<br>(e) VASIS;<br>(f) obstruction lighting;<br>(g) illuminated wind indicator; and<br>(h) aerodrome beacon. | **3.07 Control towers—requirements about aerodrome equipment and navigation aids**<br>Switching, monitors and controls for aerodrome equipment<br>(1) A control tower for a controlled aerodrome must have appropriate switching, monitors and controls for lighting equipment at the aerodrome, including for the following equipment:<br>(a) runway lighting;<br>(b) approach lighting;<br>(c) taxiway lighting;<br>(d) visual approach slope indicator systems;<br>(e) stop bars;<br>(f) obstacle lighting;<br>(g) illuminated wind direction indicator;<br>(h) aerodrome beacon. | • Proposed 3.07 (1) (a) covers both the original 3.1.2.5 (a) and (c).<br>• Proposed 3.07 (1) (b) covers both the original 3.1.2.5 (b) and (c).<br>• Proposed 3.07 (1) (e) is a new proposal and reflects the fairly recent introduction in Australia of ATC-controlled stop bar lighting. |
| 15 | 3.1.2.6 A control tower must have a means to readily recognise the failure of any terrestrial | Navigation aids<br>(2) The control tower must also have a means to readily recognise the | The proposed standard reflects that navigation aids also include space-based aids |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
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| | navigation aid being used for the control of aircraft. | failure of any navigation aid being used for the control of aircraft.<br>**Note** Subsection (2) covers both ground-based and space-based navigation aids. | |
| 16 | 3.1.2.7 A control tower must have a means of ensuring that the ILS Glide Path is not radiating if the associated Localiser is not operating. | No equivalent | Omitted because CASA is of the view that controlling the operation of navigation aids is not an ATS provider responsibility. Part 171 of CASR regulates such matters. |
| 17 | **3.1.3 Area and Approach Control Units**<br>3.1.3.1 Area and Approach Control Units must incorporate the following facilities:<br>(a) air/ground RTF and/or datalink communications equipment on assigned frequencies, in accordance with ICAO Annex 11, Chapter 6;<br>(b) ground/ground voice and/or datalink equipment to enable communication between adjacent air traffic service units including control towers | **3.08 Area and approach control units**<br>(1) Area control centres and approach control units must have the following facilities:<br>(a) time display at each operational position;<br>(b) flight data displays;<br>(c) operational data displays;<br>(d) appropriate maps and charts.<br>**Note** Annex 11 also contains provisions regulating facilities in relation to area and approach | Communication matters in 3.1.3.1 are omitted because they are dealt with in Chapter 6 of Annex 11 as follows:<br>6.1.1.3 When direct pilot-controller two-way radiotelephony or data link communications are used for the provision of air traffic control service, recording facilities shall be provided on all such air-ground communication channels.<br>6.1.4.1 Air-ground communication facilities shall enable direct, rapid, continuous and static-free two-way communications to take place between the unit providing approach control |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
|---|---|---|---|
| | and the parent area control centre or approach control unit, in accordance with ICAO Annex 11, Chapter 6;<br>(c) time display at each operational position;<br>(d) flight data display;<br>(e) operational data display;<br>(f) appropriate maps and charts;<br>(g) external communications;<br>(h) a means to readily recognise the failure of any terrestrial navigation aid used in providing separation to aircraft;<br>(i) voice and, where applicable, data recording equipment;<br>(j) AFTN terminal or other means to provide information normally conveyed by AFTN. | control units.<br>Subregulation 172.095 (3) of CASR requires that equipment and facilities mentioned in Chapter 6 of Annex 11 that an ATS provider uses in providing an air traffic service must comply with the standards of that chapter. | service and appropriately equipped aircraft under its control.<br>6.1.4.2 Where the unit providing approach control service functions as a separate unit, air-ground communications shall be conducted over communication channels provided for its exclusive use.<br>6.2.2.1.2 An area control centre, in addition to being connected to the flight information centre as prescribed in 6.2.2.1.1, shall have facilities for communications with the following units providing a service within its area of responsibility:<br>a) approach control units;<br>b) aerodrome control towers;<br>c) air traffic services reporting offices, when separately established.<br>6.2.2.1.3 An approach control unit, in addition to being connected to the flight information centre and the area control centre as prescribed in 6.2.2.1.1 and 6.2.2.1.2, shall have facilities for communications with the associated aerodrome control tower(s) and, when separately established, the associated air traffic services reporting office(s). |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
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| 18 | 3.1.3.2 Area control centres and approach control units must have a means to readily recognise the failure of any terrestrial navigation aid being used for the control of aircraft. | (2) Area control centres and approach control units must have a means to readily recognise the failure of any navigation aid being used for the control of aircraft.<br>**Note 1** Also, subregulation 172.095 ( 3) of CASR provides that equipment and facilities mentioned in Chapter 6 of Annex 11 to the Chicago Convention must meet the standards of that chapter.<br>**Note 2** Subsection (2) covers both ground-based and space-based navigation aids. | The proposed standard reflects that navigation aids also include space-based aids |
| 19 | **3.1.4 Commissioning of New Facilities and Equipment**<br>3.1.4.1 Any new facilities must be commissioned in accordance with procedures stated in the provider's Operations Manual.<br>3.1.4.2 The procedures must describe how the provider has determined that: | No equivalent | CASA proposes to omit Subsection 3.1.4 3.1.3.1 because CASA is of the view that the matters in 3.1.4.1 are already dealt with by regulations 172.080 (compliance with operations manual) and 172.145 (safety management system - SMS) of CASR and in Chapters 2 (operations manual) and 6 (SMS) of the Part 172 MOS. For example: |

| Item no. | Existing MOS Provision | Proposed New MOS provision | Explanation or cross-reference |
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| | (a) the functional and performance requirements for the facility have been met; and<br>(b) all ATS operating procedures have been validated; and<br>(c) sufficient trained ATS personnel are available to operate the facility; and<br>(d) all support arrangements for the facilities, including any necessary agreements, are in place. | | 172.080: An ATS provider must ensure that any air traffic service that it provides is provided in accordance with its provider's operations manual.<br>Part 172 MOS paragraph 2.1.2.1:<br>2.1.2.1 An operations manual must contain:<br>…<br>(v) a description of the procedures to be used in commissioning new facilities, equipment and services; |