Ashley Gibson
Regional Sector Leader – Energy, Power & Renewables
SLR Consulting

By email: agibson@slrconsulting.com

March 2026

Our reference: 108106-01

Dear Ashley

Re: Wind Monitoring Tower (Cosgrove Met Mast) – Aviation Impact Assessment

SLR Consulting Australia Pty Ltd (SLR) is installing a wind monitoring tower (WMT), Met Mast Cosgrove, within the City of Geraldton Local Government Area (LGA).

SLR has engaged Aviation Projects to prepare an Aviation Impact Assessment (AIA) for the WMT against relevant aspects of the applicable planning scheme, Civil Aviation Safety Regulations (CASR) Part 139 — *Aerodromes* and National Airports Safeguarding Framework (NASF).

1.1. References

The following information sources were referenced during the preparation of this report:

- Airservices Australia
    - Aeronautical Information Package (AIP), effective 19 March 2026.
    - Designated Airspace Handbook (DAH), effective 27 November 2025.
- Civil Aviation Safety Authority (CASA)
    - Civil Aviation Regulations 1988 (CAR).
    - Civil Aviation Safety Regulations 1998 (CASR).
    - Advisory Circular (AC) 91-02 V1.2, *Guidelines for aeroplanes with MTOW not exceeding 5700 kg – suitable places to take off and land*, dated November 2022.
    - AC 91-10 v1.6: *Operations in the vicinity of non-controlled aerodromes*, dated September 2025.
    - CASR Part 173 Manual of Standards (MOS) – *Standards Applicable to Instrument Flight Procedure Design*, version 1.8, dated August 2022.
    - CASR Part 139 MOS– *Aerodromes,* F2025L00663 compilation date 12 June 2025.
    - AC 139.E-01 v1.0—*Reporting of Tall Structures*, dated December 2021.
    - AC 139.E-05 v1.1 *Obstacles (including wind farms) outside the vicinity of a CASA certified aerodrome* (October 2022).
- City of Greater Geraldton's Local Planning Scheme No. 1.

- Department of Infrastructure, Transport, Regional Development, Communications and Arts, Australian Government, National Airport Safeguarding Framework, Guideline D *Managing the Risk to aviation safety of wind turbine installations (wind farms)/Wind Monitoring Towers*, dated July 2012.
- International Civil Aviation Organization (ICAO)
    - Annex 14—*Aerodromes.*
    - Doc 8168 *Procedures for Air Navigation Services—Aircraft Operations* (PANS-OPS).
- OzRunways, aeronautical navigation charts extracts, dated March 2026.
- Western Australia, *Planning Position Statement: Renewable energy facilities* (14 Dec 2022).
- Other references as noted.

1.2. Project description

The proposed Met Mast Cosgrove would be within the City of Geraldton LGA. The proposed mast's height would be 120 m (394 ft) above ground level (AGL), and the ground elevation of the proposed mast would be approximately 306.2 m Australian Height Datum (AHD) (from one of the anchor points of the mast abstracted from STRM, to cover the maximum ground elevation in the assessment). This results in a maximum height of approximately 426.2 m AHD (1398.3 ft above mean sea level (AMSL)).

Figure 1 Shows the location of the proposed Met Mast Cosgrove (Source: SLR, Google Earth).

Figure 1 Proposed Met Mast Cosgrove's location

Figure 2 Shows an aerial diagram of the Proposed Met Mast Cosgrove.

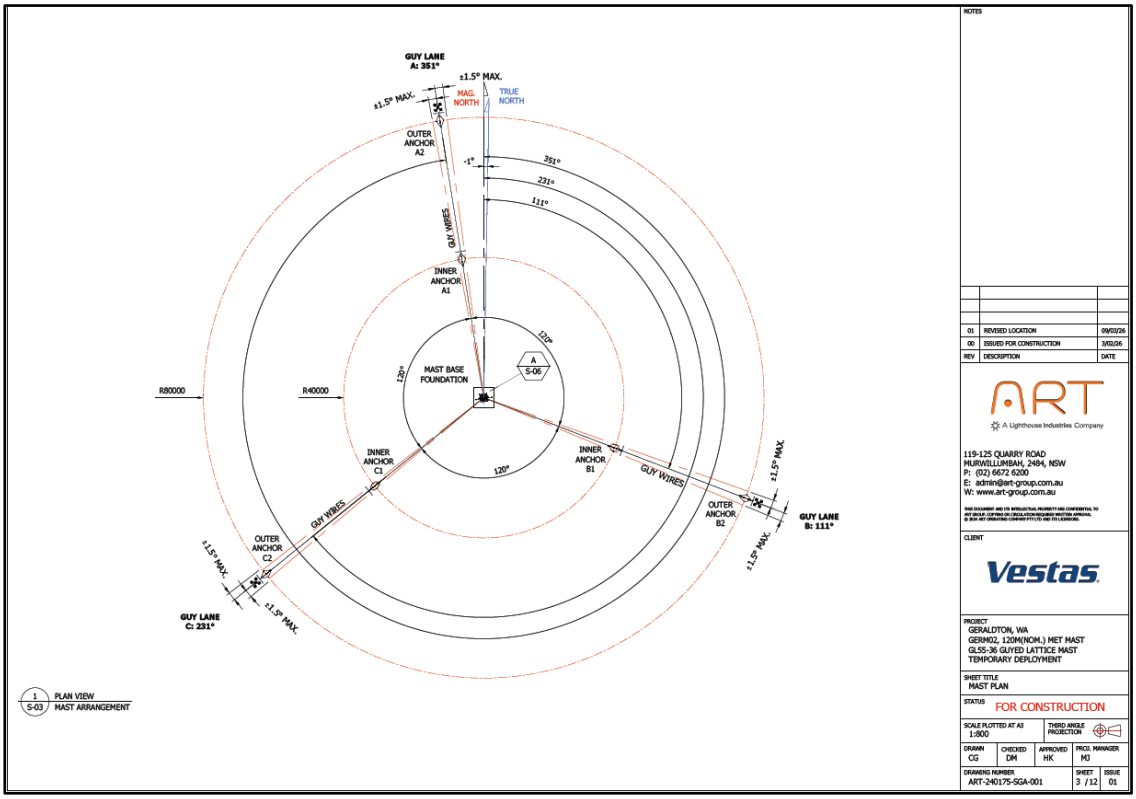


Figure 2 Aerial diagram of Proposed Met Mast Cosgrove

1.3. Western Australia Government, Department of Planning, Lands and Heritage

The Western Australian Planning Commission administers responsibility for approving renewable energy facilities through local councils. The Department of Planning, Lands and Heritage has published *Position Statement: Renewable energy facilities* (December 2022) on behalf the Western Australia Planning Commission. These guidelines provide advice to inform planning decisions about a wind energy facility proposal.

The intent of this position statement is to:

- Outline the Western Australian Planning Commission (WAPC) requirements to support the consistent consideration and provision of renewable energy facilities within Western Australia
- Identify assessment measures to facilitate appropriate development of renewable energy facilities.

The position statement applies to the preparation and assessment of planning instruments including regional and local planning schemes and strategies.

The position statement supersedes Planning Bulletin 67 Guidelines for Wind Farm Development (2004).

Section 5.3.1 *Community Consultation* and Section 5.3.5 *Public and Aviation safety* are relevant to this assessment and are extracted below:

Section 5.3.1 Community Consultation

Early consultation with the community and stakeholders by the proponents is encouraged to ensure that the proposal is compatible with existing land uses on and near the site. The local government should be consulted with respect to the community consultation program. Relevant stakeholders may include:

- *Air Services Australia*
- *Australian Wind Alliance*
- *Civil Aviation Safety Authority*

5.3.5 Public and aviation safety

Proponents of wind turbine proposals should refer to the National Airports Safeguarding Framework (NASF) Guideline D: Managing the Risk to Aviation Safety of Wind Turbine Installation (Wind Farms) / Wind Monitoring Towers to determine any potential aviation safety risks and possible mitigation measures.

Any potential aviation safety risks identified require consultation with Civil Aviation Safety Authority (CASA), Air Services Australia and/or the Commonwealth Department of Defence.

The position paper defines Renewable energy facility as premises used to generate energy from a renewable energy source and includes any building or other structure used in, or relating to, the generation of energy by a renewable resource. It does not include renewable energy electricity generation where the energy produced principally supplies a domestic and/or business premises and any on selling to the grid is secondary.

An AIA would include consultation with relevant aviation stakeholders and address aviation-related matters included in the Position Statement.

1.4. City of Greater Geraldton

The WMT will be subject to the City of Greater Geraldton's Local Planning Scheme No. 1. The WMT is located on land zoned as Rural, as identified on Local Planning Scheme No. 1 - map 12.

The Planning Scheme limits the height of development, as specified in Section 4.17 -Development height:

Unless otherwise approved by the local government, no development shall be constructed to exceed the height limits of the Geraldton Airport Obstacle Limitation Surface or this Scheme.

Geraldton Airport is identified as a Special Control Area in the planning scheme, with purposes and objectives established as follows:

(a) protect against developments that are incompatible with continuing airport operations.

(b) control noise sensitive development that has the potential to impact on the capacity of the airport.

This WMT assessment will identify the potential impact of the WMT on the obstacle limitation surface at Geraldton Airport and the operation of the airport generally.

1.5. Nearby certified aerodromes

A certified aerodrome is an aerodrome regulated by the Civil Aviation Safety Authority (CASA) under Part 139 of the Civil Aviation Safety Regulations (CASR), with defined standards established in Part 139 (Aerodromes) Manual of Standards (MOS) 2019.

There are no certified aerodromes located within 30 nm of the proposed site. The closest certified aerodrome would be Geraldton Airport (YGEL), approximately 66.2 km/35.7 nm west of the Project Site.

The 30 nm radius represents the 25 nm minimum sector altitude (MSA) for aerodromes with terminal instrument flight procedures. The 25 nm MSA is determined by assessing obstacles within 30 nm (25 nm plus 5 nm buffer) of the aerodrome reference point or navigational aid on which the MSA is based.

The location of the proposed Met Mast Cosgrove relative to Geraldton Airport (YKNG) and Morawa Airport (YMRW) is shown in Figure 3 (source: SLR, Google Earth). The orange circle represents a 30 nm radius from the airport's aerodrome reference point (ARP).

Figure 3 Location of the certified airport in relation to the proposed Met Mast Cosgrove.

1.6. Nearby uncertified aerodromes

A search of the following aviation datasets was used to identify uncertified aerodromes near the project area. They are not subject to CASR Part 139 regulations:

- AIP aeronautical charts effective 27 November 2025
- OzRunways - which sources its data from Airservices Australia (AIP). The aeronautical data provided by OzRunways is approved under CASA CASR Part 175

As a guide, an area of interest within a 3 nm radius of an uncertified aerodrome is used to assess the potential impacts of proposed developments on aircraft operations at or within the vicinity of the uncertified aerodrome.

The closest uncertified aerodrome would be approximately 10 nm away. Therefore, the proposed Met Mast Cosgrove would not impact any known uncertified aerodromes.

1.7. Air routes and Grid LSALT

CASR Part 173 MOS requires that the published lowest safe altitude (LSALT) for a particular airspace grid or air route provides a minimum of 1000 ft clearance above the controlling (highest) obstacle within the relevant airspace grid or air route tolerances.

1.7.1. Grid LSALT

The proposed Met Mast Cosgrove would be within the airspace grid LSALT of 2900 ft AMSL, which has a protection surface of 1900 ft AMSL.

Figure 4 shows the Grid LSALT in proximity to the proposed Met Mast Cosgrove (source: ERC Low National, OzRunways, Google Earth).

The proposed mast's height would be 426.2 m AHD (1398.3 ft AMSL), below the 1900 ft protection surface.

Therefore, the proposed Met Mast Cosgrove would not impact the 2900 ft Grid LSALT.

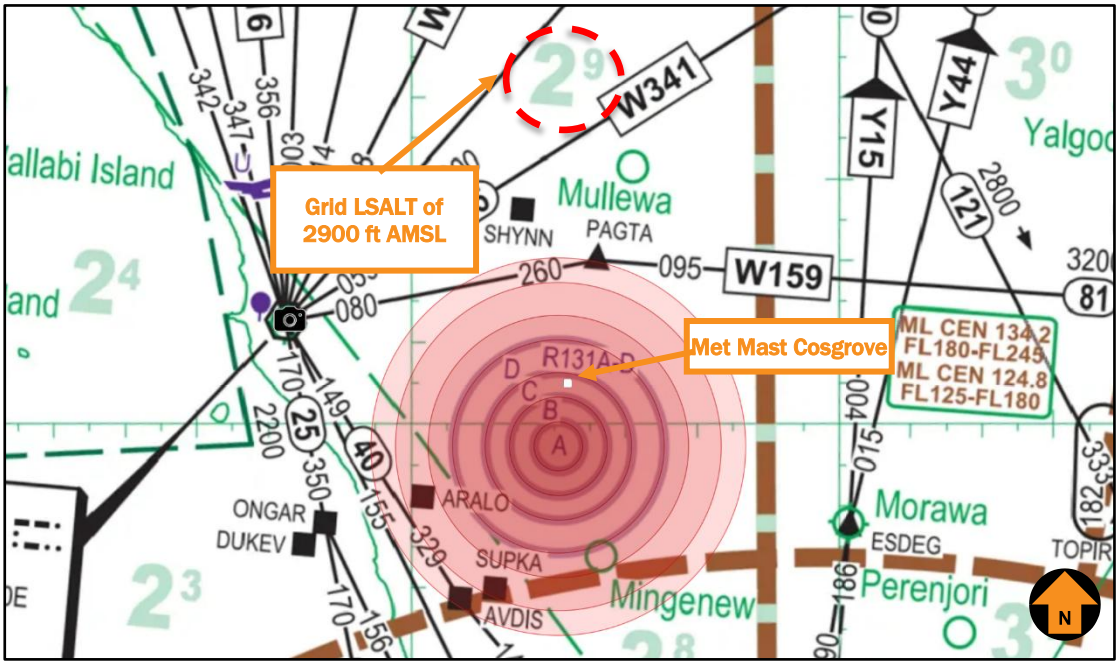


Figure 4 Grid LSALT in proximity to the WMT's site.

1.7.2. Air Route LSALTs

A protection area 7 nm laterally on either side of an air route is used to assess the LSALT for the air route.

There are no air routes within the protection area of the proposed Met Mast Cosgrove.

Therefore, the proposed Met Mast Cosgrove would not impact any Air route LSALT.

1.8. Airspace

The proposed Met Mast Cosgrove is located outside of controlled airspace (wholly within Class G airspace) and is not located in any Prohibited, Restricted, or Danger areas.

The location proposed Met Mast Cosgrove is within the lateral dimensions of R131C, as shown in Figure 5 (Source, ERC Low), but is below the vertical limit of minimum 10,000 ft as shown in Figure 6 (Source: DAH, effective 27 November 2025). Therefore, the proposed Met Mast Cosgrove would not impact the Restricted Area R131C.

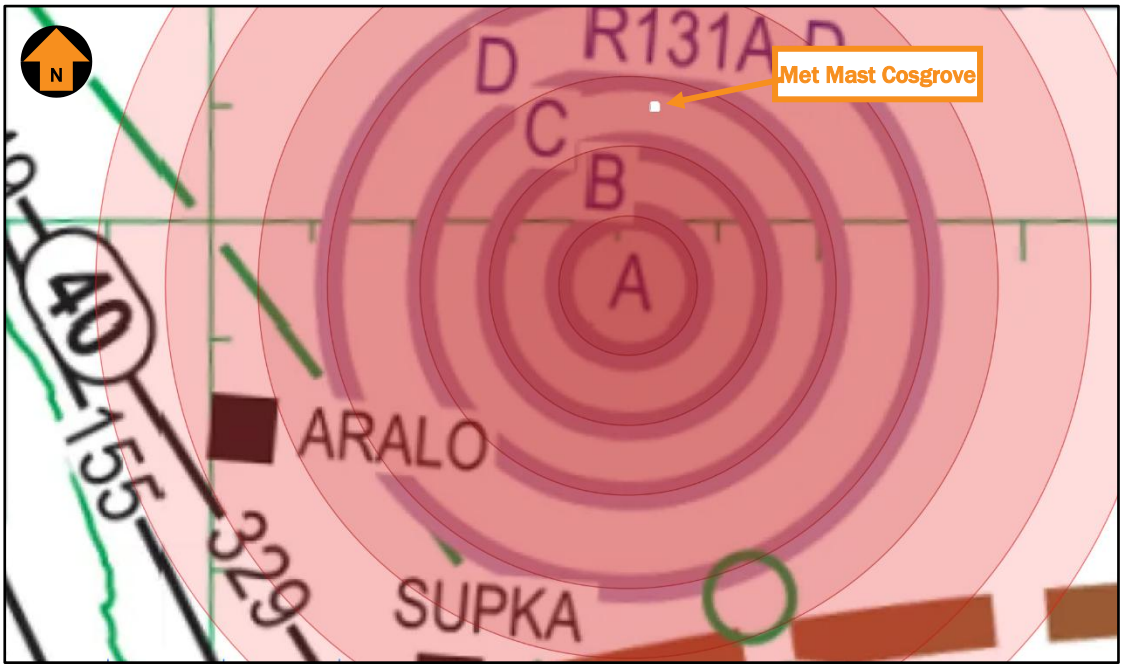


Figure 5 The proposed WMT in relation to R131C

YMMM/R131C YATHARAGGA
CONDITIONAL STATUS: RA3
LASER RADIATION OCULAR HAZARD
LATERAL LIMITS: A circle radius 9.00NM centre 290246S 1152040E
VERTICAL LIMITS: 10000 - UNL
HOURS OF ACTIVITY: H24
CONTROLLING AUTHORITY: Geoscience Australia

Figure 6 Dimension of R131C

The Met Mast Cosgrove would not have an impact on controlled or designated airspace.

1.9. Aviation navigation facilities

NASF Guideline G, *Protection of Aviation Facilities - Communication, Navigation and Surveillance (CNS)* and CASR Part 139 MOS specify the area where development of buildings and structures has the potential to cause unacceptable interference to CNS facilities.

The proposed Met Mast Cosgrove would be located at a sufficient distance away from nearby certified aerodromes and aviation facilities and would not have an impact.

1.10. ATC Surveillance Radar Systems

Airservices Australia currently requires an assessment of the potential for wind farms to affect radar lines of sight.

The open lattice construction of slim wind monitoring towers does not impact ATC Surveillance Radar Systems.

1.11. Civil Aviation Safety Authority - regulatory context

The CASA regulates aviation activities in Australia. Applicable requirements include the Civil Aviation Regulations 1988 (CAR), CASR 1998, Advisory Circular (AC) 139 E 0.1-v1.0, and AC.139 E 0.5-v1.1. Relevant provisions are outlined in further detail in the following section.

1.11.1. CASR Part 139—Aerodromes

CASR 139.165 requires the owner of a structure (or proponents of a structure) that will be 100 m or more above ground level to inform CASA. This must be given in written notice and contain information on the proposal, the height and location(s) of the object(s) and the proposed timeframe for construction. This is to allow CASA to assess the effect of the structure on aircraft operations and determine whether or not the structure will be hazardous to aircraft operations.

The proponent of the Mast 8 is required to report the Met Mast to CASA in accordance with CASR 139.165, *as soon as practicable after forming the intention to construct or erect the proposed object or structure.*

The notification should be provided to CASA via email to Aerodromes@casa.gov.au and Airspace.Protection@casa.gov.au.

1.11.2. AC 139.E-01 v1.0—Reporting of Tall Structures

AC 139.E-01 v1.0—*Reporting of Tall Structures*, CASA guides those authorities and persons involved in the planning, approval, erection, extension or dismantling of tall structures so that they may understand the vital nature of the information they provide.

> *2.2.1 The hazards that such buildings or structures may pose to aircraft requires assessment. CASA routinely performs such assessments however needs to be first notified of the obstacle, structure of source of a hazardous plume. The need to report such hazards is outlined in this AC.*
>
> *2.2.2 If you are the person who owns, controls or operates the object, structure or a source of a hazardous plume which is either present, imminent or has been approved for erection/construction, details need to be provided about:*
>
> - *the construction, extension or dismantling of tall structures if the top is:*
>
> - *100 m or more above ground level*
>
> - *or*
>
> - *affects the obstacle limitation surface of an aerodrome as defined in*
>
> *2.2.3 In addition, tall structures may pose a specific hazard for the operation of low-flying Defence aircraft or to the flight paths of arriving/departing aircraft (refer Paragraph 2.1.3). Therefore, the RAAF and Airservices Australia require information on structures that are 30 m or more above ground level—within 30 km of an aerodrome or 45 m or more above ground level elsewhere for the RAAF, or 30 m or more above ground level elsewhere for Airservices Australia.*
>
> *2.2.4 Information provided for the database should be accurate and readily interpreted. The tall structure report form has been designed to help owners and/or developers in this respect. The form is available on the Airservices Australia website (including a spreadsheet for reporting multiple structures) at: https://www.airservicesaustralia.com/industry-info/airport-development-assessments/*

1.11.3.AC 139.E-05-v1.1 Obstacles including wind farms outside the vicinity of a CASA certified aerodrome – October 2022

AC 139.E-05-v1.1 provides advice about the lighting and marking of wind farms and other tall structures in submissions to planning authorities who are considering a wind farm or tall structure proposal.

2.1.2 Regardless of CASA advice, planning authorities make the final determination whether a wind farm or a tall structure not in the vicinity of a CASA regulated aerodrome will require lighting or marking.

2.2.1 All wind turbine developments and tall structures should be assessed to determine whether they could be a risk to aviation safety. This AC augments the information in the National Aerodromes Safeguarding Framework (NASF) Guideline D and provides additional guidance on the assessment of wind farm developments and guidance for establishing what reasonable measures may be put in place to mitigate any adverse effect the wind farm development could be to aviation safety.

2.2.2 For the purposes of this AC, navigable airspace is considered to be the airspace above the minimum altitudes of VFR and IFR flight, including airspace required to ensure the safe take-off and landing of an aircraft. Generally, minimum altitude limits equate to 500 ft (152 m) or 1 000 ft (305 m) above ground level depending on the situation, i.e., whether or not the flying is over a populous area. The presence of wind turbines, wind monitoring masts and other tall obstacles may create a risk to the safety of flight, due to the risk of collision. An entity that is proposing to introduce a hazard into navigable airspace, such as a wind farm, must mitigate the risk of the hazard on airspace users to ensure an acceptable level of safety is maintained.

2.2.4.1 Part 139 of the Civil Aviation Safety Regulations 1998 (CASR), regulates obstacles within the vicinity of certified aerodromes. This is supported by Part 139 (Aerodromes) Manual of Standards (MOS) which provides the definition of an obstacle as well as the standards for marking and lighting of an obstacle. Any wind turbine (where the height is defined to be the maximum height reached by the tip of the turbine blades), wind monitoring mast or other tall structure that penetrates an Obstacle Limitation Surface (OLS) of an aerodrome will be assessed in accordance with the provisions of Part 139 of CASR and the MOS.

2.2.6.1 Outside the vicinity of an aerodrome, which is defined as being outside the OLS of an aerodrome, wind farms and other tall structures may constitute a risk to low-flying aviation operations which may be conducted down to 500 ft above ground level (AGL) over non-populous areas. Additionally, wind monitoring masts can also be hazardous to aviation, given they are very thin and difficult to see. Wind farms can also affect the performance of communications, navigation and surveillance (CNS) equipment operated by Airservices or the Department of Defence.

2.5 Aviation hazard lighting - International best practice

2.5.2 Australian regulations state that aircraft in uncontrolled airspace may operate under visual flight rules (VFR), which requires the pilot to remain clear of clouds and to adhere to visibility minima.

- in Class G airspace below 3000 ft Above Mean Sea Level (AMSL) or 1000 ft AGL (whichever is the higher) – remain clear of cloud with minimum visibility of 5000 m.

– in Class G airspace below 10 000 ft AMSL (subject to the above) – remain 1000 ft vertically and 1500 m horizontally from cloud and with 5000 m visibility.

Note: Helicopters may be permitted to operate in lower visibility and that further exemptions may apply to special cases such as military, search and rescue, medical emergency, agricultural and fire-fighting operations.

2.5.4 2000 candela medium intensity obstacle lighting recommendation satisfies the 5000 m VFR visibility requirements, according to practical exercises undertaken by the FAA and documented in AC 70/7460-1L (FAA, 2015).

2.5.5 In Australia, CASA has accepted the use of 200 candela lighting in some circumstances due to a lack of back lighting in rural and remote areas, meaning that a lower intensity light is still visible to pilots at an acceptable distance to permit a pilot to see and avoid the obstacle.

2.6 Hazard Lighting

2.6.1 This describes the reasoning behind CASA's preference to recommend aviation hazard lighting for tall structures and aircraft detection systems for wind farms.

2.6.2 Hazard lighting for wind farms and other tall structures is intended to alert pilots, flying at low altitude, to the presence of an obstacle allowing them sufficient awareness to safely navigate around or avoid it. The pilot is responsible for avoiding other traffic and obstacles based on the "alerted" see-and-avoid principle.

2.6.3 Unless the wind farm or tall structure is located near an airport, it is not expected to pose a risk to regular public transport operations. The kind of air traffic that is usually encountered at low altitude in the vicinity of a wind farm or tall structure includes light aircraft (private operators, flight schools, sport aviation, agricultural, survey, fire spotting and control) and helicopters (military, police, medical emergency services, survey, fire spotting and control). Hazard lights are therefore designed to provide pilots with sufficient awareness about the presence of the structure(s), so they can avoid it. This means that the intensity of the hazard lights should be such that the acquisition distance is sufficient for the pilot to recognise the danger, take evasive action and avoid the obstacle by a safe margin in all visibility conditions. This outcome considers the potential speed of an aircraft to determine the distance by which the pilot must become aware of the obstacle to have enough time and manoeuvrability to avoid it.

2.7 CASA's commitment to aviation safety

2.7.1 CASA will consider the lighting intensity management and systems that achieve an acceptable level of aviation safety on a case-by-case basis during its assessment.

2.7.2 A CASA determination will consider the environmental setting when determining the need and level of lighting required on a wind farm or tall structure. This may include consideration of lower lighting intensities for obstacles away from an aerodrome. The backlighting of some locations is almost non-existent, meaning the risk of an aviation hazard light being compromised by background lighting from a rural and remote town is lower than would otherwise apply in a residential area closer to a city.

1.12. National Airport Safeguarding Framework Guideline D

NASF Guideline D: *Managing the Risk to Aviation Safety of Wind Turbine Installation (Wind Farms)/Wind Monitoring Towers* provides guidance to State/Territory and local government decision-makers, airport operators and developers of wind farms to jointly address the risk to civil aviation arising from the development, presence and use of wind farms and wind monitoring towers.

> *When wind turbines over 150 metres above ground level are to be built within 30 kms of a certified or registered aerodrome, the proponent should notify the Civil Aviation Safety Authority (CASA) and Airservices. If the wind farm is within 30km of a military aerodrome, Defence should be notified.*

The Aeronautical Information Service of the Royal Australian Air Force (RAAF AIS) maintains a database of tall structures in the country. The RAAF AIS should be notified of all tall structures meeting the following criteria:

- *30 metres or more above ground level for structures within 30km of an aerodrome; or*
- *45 metres or more above ground level for structures located elsewhere.*

Marking and lighting of wind monitoring towers

Before developing a wind farm, it is common for wind monitoring towers to be erected for anemometers and other meteorological sensing instruments to evaluate the suitability or otherwise of a site. These towers are often retained after the wind farm commences operations to provide the relevant meteorological readings. These structures are very difficult to see from the air due to their slender construction and guy wires. This is a particular problem for low flying aircraft including aerial agricultural operations. Wind farm proponents should take appropriate steps to minimise such hazards, particularly in areas where aerial agricultural operations occur. Measures to be considered should include:

- *the top 1/3 of wind monitoring towers to painted in alternating contrasting bands of colour. Examples of effective measures can be found in the Manual of Standards for Part 139 of the Civil Aviation Safety Regulations 1998. In areas where aerial agriculture operations take place, marker balls or high visibility flags can be used to increase the visibility of the towers;*
- *marker balls or high visibility flags or high visibility sleeves placed on the outside guy wires;*
- *ensuring the guy wire ground attachment points have contrasting colours to the surrounding ground/vegetation; or*
- *a flashing strobe light during daylight hours.*

1.13. Consultation

The following list of stakeholders was identified as requiring consultation:

- Airservices Australia
- Department of Defence

Details and results of the consultation activities will be provided in Table 1 once received.

1.14. Summary

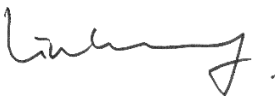
The following list of findings summarises the outcome of this assessment, based on the maximum height of the 120 m AGL Met Mast of 426.2 m AHD (1398.3 ft AMSL):

- There are no certified aerodromes located within 30 nm (55.6 km) of the proposed Met Mast Cosgrove.
- The proposed Met Mast Cosgrove would not be within the OLS surface of Geraldton Airport. The compliance won't apply to this development.
- There are no uncertified aerodromes identified within 3 nm of the proposed Met Mast Cosgrove.

- The Met Mast Cosgrove would not affect any Grid or airway route segment LSALT
- The Met Mast Cosgrove would not have an impact on controlled or designated airspace.
- SLR advised that the following visibility provisions will also be included in the finished installation:
    - Ø300mm orange ball markers on outmost guy wires
    - Rotamarka ring spindle markers on outmost guy wires
    - AV1 - AVIATION LIGHT MEDIUM INTENSITY RED FLASHING 24H
    - Mast painted red/white to full height
    - Painting on cattle fencing red/white
    - Aviation lower ground markers – 5 x Yellow 600x600x50 at ground anchors
- Details of WMTs 100 m or more AGL, it must be reported to CASA as soon as practicable after forming the intention to construct or erect the proposed object or structure, in accordance with CASR 139.165(1)(2). The notification should be provided to CASA via email to Airspace.Protection@casa.gov.au.
- Final details of met mast coordinates and elevation should be provided to Airservices Australia at least two weeks prior to construction commencing, by submitting the form at this webpage: https://www.airservicesaustralia.com/wp-content/uploads/ATS-FORM-0085_Vertical_Obstruction_Data_Form.pdf to the following email address: vod@airservicesaustralia.com.

If you wish to clarify or discuss the contents of this correspondence, please get in touch with me on 0433 747 835.

Kind regards



Lyn Wang

Aviation Specialist Consultant

12 March 2026

Table 1 Stakeholder consultation details

Agency/Contact	*Activity/Date*	*Response/ Date*	*Issues Raised During Consultation*	*Action Proposed*
Airservices Australia				
Department of Defence				