

66kV Salt Creek Wind Farm – transmission line aircraft markers

Regulatory assessment report

CM-6911

Preface

This regulatory assessment report has been prepared by Energy Safe Victoria (ESV) pursuant to the objectives, powers and functions conferred on it by The Electricity Safety Act 1998 (Act).

Specifically, these include, amongst other things, to investigate events or incidents, which have implications for electricity safety and to regulate, monitor and enforce the prevention and mitigation of bushfires that arise out of incidents involving electric lines or electrical installations and to monitor and enforce compliance with this Act and the regulations.

This report has been endorsed by the Director of Energy Safety in Victoria.

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Summary

ESV received a complaint via Office of the National Wind Farm Commissioner (ONWFC) from an operator of an airstrip in relation to the adequacy of marking balls installed on a section of the Salt Creek Wind Farm transmission line.

The concerned section of transmission line is adjacent to the airstrip known as “Mortlake”, located at Mortlake-Framlingham road, South Boorook.

The airstrip is generally used for private purposes (cattle sales, jockeys flying into the region, training pilots). It has also been used by police and ambulance. It is rarely used for aerial cropping purposes because these operations are too expensive in this area.

AusNet Transmission Group Pty Ltd (AusNet) operates the Salt Creek Wind Farm transmission line which was commissioned on 4 June 2018.

During the last quarter of 2018 the operator of the airstrip requested AusNet to install marking balls on 2 spans of the transmission line between poles number 132 to 134.

On 12 March 2019 AusNet installed 6 marking balls, at its own cost, on the two spans of the transmission line with 3 marking balls installed per span. AusNet was not made aware of any concern with the marking balls until Energy Safe Victoria initiated an investigation into compliance with appropriate marking standards.

The basis of the complaint from the airstrip operator was that:

- the marking balls are not effective
- the marking balls are not visible from aircraft.

The airstrip operator requested via the ONWFC that the marking balls be replaced with larger marking balls in a different colour.

AusNet operates their transmission network under an Electricity Safety Management Scheme (ESMS) that was accepted by ESV under Division 2, Part 10 of the Electricity Safety Act 1998.

Regarding marking aerial transmission lines under the accepted ESMS; AusNet is required to comply with:

- AS 3891.1 Air navigation – cables and their supporting structures – marking and safety requirements [Part 1](#): Permanent marking of overhead cables and their supporting structures for other than planned low-level flying
- AS 3891.2: Air navigation – cables and their supporting structures – marking and safety requirements [Part 2](#): Low level aviation operations.

ESV has assessed the compliance of the installation of marking balls against the Standard and advises that:

1. Under the accepted ESMS; AusNet is required to comply with the published standards AS 3891.1 and AS 3891.2
2. The published standards do not require AusNet to install marking balls on the two spans of the Salt Creek Wind Farm transmission line adjacent to the Mortlake airstrip
3. AusNet responded to a request made to install marking balls onto the Salt Creek Wind Farm transmission line in accordance with clause 3 of AS 3891.2
4. The installation of the marking balls on the Salt Creek Wind Farm transmission line complied with AS3891.2
5. The Mortlake airstrip is considered by clause 5.8 of AS3891.1 as ‘Situations not covered by this Standard’

6. The complainant may seek to negotiate the terms and conditions under which the existing marking balls could be replaced with an alternative size and colour
7. The complainant may seek resolution from Regional Airspace Advisory Committee (CASA) if they are not able to reach agreement with AusNet (refer to clause 5.8 of AS3891.1).

Introduction

Scope

This report details the findings of an Energy Safe Victoria (ESV) regulatory assessment into the regulatory requirement of installing markers onto the Salt Creek wind farm transmission line near Mortlake, South Boorook, Victoria.

Objectives

ESV's objective is to assess whether or not the marking balls on the transmission line are compliant with Australian standards:

- AS 3891.1 Part 1: Permanent marking of overhead cables and their supporting structures for other than planned low-level flying
- AS 3891.2: Air navigation – cables and their supporting structures – Marking and Safety requirements Part 2: Low level aviation operations.

Methodology

1. Source information and data from:
 - Civil Aviation Safety Authority
 - Standard Australia committee EL-010 Overhead Lines which prepared the above standards
 - Operator of the transmission line: AusNet
 - Owner/Operator of the airstrip
 - AusNet's Electricity Safety Management Scheme that was accepted under Division 2, part 10 of the Electricity Safety Act 1998.
2. Determine whether the marking balls of the transmission line is compliant with AS 3891.1 and AS 3891.2.

Background

ESV received a complaint via Office of the National Wind Farm Commissioner (ONWFC) from an operator of an airstrip in relation to the adequacy of marking balls installed on a section of the Salt Creek Wind Farm transmission line.

The concerned section of transmission line is adjacent to the airstrip known as 'Mortlake', located at Mortlake-Framlingham road, South Boorook.

The airstrip is generally used for private purposes (cattle sales, jockeys flying into the region, training pilots). It has also been used by police and ambulance. It is rarely used for aerial cropping purposes because these operations are too expensive in this area.

AusNet Transmission Group Pty Ltd (AusNet) operates the Salt Creek Wind Farm transmission line which was commissioned on 4 June 2018.

During the last quarter of 2018 the operator of the airstrip requested AusNet to install marking balls on two spans of the transmission line between poles number 132 to 134. See photo 1.



Photo 1: Aerial view of the airstrip and the Salt Creek Wind Farm transmission line.

On 12 March 2019 AusNet installed, at its own cost, six marking balls on the two spans of the transmission line with three balls installed per span. See photo 2.

AusNet Services was not made aware of any concern with the marking balls until Energy Safe Victoria initiated an investigation into compliance with appropriate marking standards.



Photo 2: Three marking balls on one span

The airstrip operator complained that:

- the marking balls are not effective
- the marking balls are not visible from aircraft.

The airstrip operator requested the balls be replaced with larger marking balls in a different colour.

Legislative Requirements

Section 98 of the Electricity Safety Act 1998 requires a major electricity company (MEC) to design, construct, operate, maintain and decommission its supply network to minimise as far as practicable:

- (a) the hazards and risks to the safety of any person arising from the supply network, and
- (b) the hazards and risks of damage to the property of any person arising from the supply network, and
- (c) the bushfire danger arising from the supply network.

AusNet, being an MEC, operates their transmission network under an Electricity Safety Management Scheme (ESMS) that was accepted under Division 2, Part 10 of the Electricity Safety Act 1998.

Regarding marking aerial transmission lines under the accepted ESMS; AusNet is required to comply with:

- AS 3891.1 Air navigation – cables and their supporting structures – marking and safety requirements [Part 1](#): Permanent marking of overhead cables and their supporting structures for other than planned low-level flying
- AS 3891.2: Air navigation – cables and their supporting structures – marking and safety requirements [Part 2](#): Low level aviation operations.

Regulatory assessment

Salt Creek Wind Farm transmission line

The transmission line is an aerial 66kV circuit with a single overhead optical fibre ground wire. The line was commissioned on 4 June 2018 and is operated by AusNet Transmission Group Pty Ltd.

A section of the line adjacent to Mortlake airstrip is two spans from pole 132 to pole 134. AusNet installed six marking balls on the two spans on 12 March 2019. The details are as follows:

1. Six marking balls were installed on the OPGW
2. Three marking balls were evenly spaced on each span
3. The span length from pole number 132 to pole number 133 is 260m
4. The span length from pole number 133 to pole number 134 is 252m
5. All six marking balls have a diameter of 300mm, are yellow in colour and were manufactured by Preformed Line Products – Australia (PLP part number D-UFO3160Y).

Civil Aviation Safety Authority (CASA)

Advice was sought from CASA regarding requirements of installing marking balls onto transmission lines adjacent to private airstrips.

CASA advised that:

1. CASA keeps a register of regulated aerodromes which are currently categorised as either 'Registered' or 'Certified'. These can be found on the Airservices Australia website in the En-Route Supplement Australia (ERSA) publication at:
www.airservicesaustralia.com/aip/aip.asp?pg=40&vdate=23MAY2019&ver=1
2. Operators of these aerodromes are obligated to maintain their facilities to standards prescribed in the Manual of Standards (MOS) Part 139 – Aerodromes.
3. ERSA also contains information on some larger unregulated 'certain other aerodromes' known as Aeroplane Landing Areas (ALAs). ALAs are not regulated by CASA and as such recognised aerodrome standards are not assured at these facilities. To use an ALA the onus is on the aircraft operator / pilot to determine if their aircraft can be operated there safely.
4. Mortlake is an unregulated ALA and not included in the ERSA.
5. Other directories exist such as the AOPA Airfield Directory which typically includes ALAs such as Mortlake, however the accompanying information ought to be verified by the operator.
6. The Australian Standards are not a set of rules which CASA can speak into or regulate, however CASA would support the addition of markers for any hazards, such as that posed by electrical transmission lines near the aerodrome, in the interests of aviation safety.

Standards Australia

AusNet must comply with:

- AS 3891.1 Air navigation – cables and their supporting structures – marking and safety requirements Part 1: Permanent marking of overhead cables and their supporting structures for other than planned low-level flying
- AS 3891.2: Air navigation – cables and their supporting structures – marking and safety requirements Part 2: Low level aviation operations.

It is important to understand that not all aerial transmission lines are required to be affixed with marking balls. Standards Australia sets out criteria as to which transmission lines are required to have marking balls installed. It is prudent to identify circumstances or conditions specified in Standards Australia that mandate the installation of marking balls on the Salt Creek Wind Farm transmission line.

The following sections assess applicable clauses of AS 3891.1 and AS 3891.2. Direct extracts from the standards are shown in blue. This assessment is intended to show which parts of AS 3891.1 and AS 3891.2 are applicable to the installation of marking balls onto the Salt Creek Wind Farm transmission line.

AS 3891.1 Part 1: Permanent marking of overhead cables and their supporting structures for other than planned low-level flying¹

1 SCOPE

This Standard specifies requirements for aircraft warning markers for use on overhead cables and their supporting structures. This Standard is not intended for the marking of overhead cables for visual warnings to pilots of aircraft involved in intentional and legal low-level operations. The relevant marking requirements for those operations can be found in Part 2 of this Standard.

Nothing in this Standard shall prevent the marking of cables not specified in this Standard, considered by their owner to require marking, provided that the markings are consistent with the colours and devices detailed in this Standard.

- Therefore, this Standard applies to the Salt Creek Wind Farm transmission line.

3 DEFINITIONS

3.2 Authorized landing areas, authorized alighting areas:

Authorized landing areas (land based aircraft) and authorized alighting areas (seaplanes) are—

- any landing or alighting place used by a licensed flying school as a base or satellite landing/alighting area;
 - any landing or alighting area used by regular public transport (RPT) flights; or
 - any landing or alighting place at which air charter, air work operators holding the current, appropriate Air Operators Certificate from the Civil Aviation Safety Authority are based
- Based on the information available to ESV, the Mortlake airstrip is not an authorised landing area or alighting area.

5 CABLES REQUIRING MARKERS

- This clause sets out:
 - situations, conditions and locations where marking balls are required to be installed
 - marking ball's specification (size, colors, shapes, types, materials, etc.)

¹ Only relevant sections of AS 3891.1 are referenced and included in this report, so sections are not consecutively numbered.

- spacing between marking balls.

5.1 Cable height in excess of 90 metres

- The ground clearance of the transmission line does not exceed 90 metres.

5.2 Cable height in excess of 150 metres, or spans exceeding 1500 metres

- No spans of the transmission line exceed 150 metres in height.
- No spans of the transmission line exceed 1500 metres in length.

5.3 Structures supporting long spans (exceed 90 metres in height and exceed 1500 metres in length)

- No spans of the transmission line exceed 90 metres in height.
- No spans of the transmission line exceed 1500 metres in length.

5.4 Cables in proximity to licensed or Government aerodromes

Surveyors from CASA specify requirements in these cases.

- Based on the information available to ESV this aerodrome is not a licensed nor Government aerodrome.

5.5 Cables in proximity to authorized landing and alighting areas defined in Clause 3.2

- Based on the information available to ESV the Mortlake airstrip is not an authorised landing area or alighting area.

5.6 Remote areas

- This clause defines remote areas which are exempt from the requirement of this standard.
- The Mortlake airstrip is not considered as a remote area.

5.7 Parallel cables

Any cable running generally parallel to, and within 100 m of, a cable marked in accordance with the requirements of this Standard, is exempt from those requirements provided the highest cable is marked.

- There are no cables running generally parallel to and within 100 m of The Salt Creek Wind Farm transmission line which is therefore not exempt under this clause.

5.8 Situations not covered by this Standard

If an air operator considers that a cable not covered by the provisions of this Standard requires marking and is not able to reach agreement with the cable owner, the matter shall be referred to the appropriate Regional Airspace Advisory Committee for resolution.

- As the Salt Creek Wind Farm transmission line is not covered by the provisions of this Standard, the operator of the Mortlake airstrip may refer this matter to Regional Airspace Advisory Committee for resolution.

AS 3891.2 Part 2: Air navigation – cables and their supporting structures – Marking and Safety requirements Part 2: Low level aviation operations²

1 SCOPE

This Standard specifies requirements for marking of overhead cables and their structures for visual warnings to pilots of aircraft involved in planned legal low level aviation operations

² Only relevant sections of AS 3891.2 are referenced and included in this report, so sections are not consecutively numbered.

- The above scope clearly states Part 2 is for planned, low level and legal aviation operations. Typical aviation operations within the scope of this standard include aerial application, mustering, and emergency services response.
- A 'planned, low level and legal aviation operation' is defined by clause 1.3.3. (See below).
- There is limited information available to ESV on the use of Mortlake airstrip. It is understood that the airstrip is generally used for private purposes (cattle sales, jockeys flying into the region, training pilots). It had also been used by police and ambulance.
- There is no evidence available to ESV that it is used for 'planned, low level and legal aviation operation'.

1.3 Definitions:

1.3.2 Landing areas for planned low level aviation operations

Any landing or alighting place other than the authorised landing areas defined in AS 3891.1.

- As described earlier in this report, the Mortlake airstrip is not an authorised landing area defined by clause 3.2 of 3891.1. Therefore, according to this definition, the Mortlake airstrip is considered a 'landing area for low level aviation operations'.
- ESV notes that the Standard does not require, recommend or suggest that marking balls be installed on overhead cables and their supporting structures in the proximity of 'landing areas for planned low level aviation operations'. In other words AS3891.2 does not require the Salt Creek Wind Farm transmission line to have marking balls installed.

1.3.3 Planned, low level and legal aviation operations

Any aviation operation that involves flight below 500 feet (approximately 152 metres) above ground level, that is permitted under the Civil Aviation Act, Civil Aviation Regulations (CAR), Civil Aviation Safety Regulations (CASR) or a Civil Aviation Safety Authority (CASA) permission or exemption and which involves planning for the safe conduct of the operation.

- There is no available to ESV evidence that the Mortlake airstrip is used for 'Planned, low level and legal aviation operations' other than for landing and taking off.

2 DESIGN AND CONSTRUCTION

- This clause 'design and construction' is not relevant to the assessment of whether part 1 or part 2 of AS3891 is applicable.

3 RESPONSIBILITIES FOR MARKING

3.1 Responsibility for requesting marking:

The person requesting or undertaking planned low-level and legal aviation operations (e.g. the land owner, aviation business or pilot or their delegate) shall be responsible for requesting installation of aircraft warning markers.

- In the case of the Mortlake airstrip, it is understood the operator of the airstrip requested installation of marking balls on the Salt Creek Wind Farm transmission line. AusNet undertook the work at no cost to the requestor.
- The published standards do not require AusNet to install marking balls on the two spans of the Salt Creek Wind Farm transmission line adjacent to the Mortlake airstrip.

Findings and conclusions

ESV has completed a regulatory assessment into the regulatory requirement of installing marking balls onto the Salt Creek Wind Farm transmission line near Mortlake, South Boorook, Victoria.

Responsibility for marking

ESV advises that:

1. Under the accepted ESMS; AusNet is required to comply with the published standards AS 3891.1 and AS 3891
2. The published standards do not require AusNet to install marking balls on the two spans of the Salt Creek Wind Farm transmission line adjacent to the Mortlake airstrip
3. AusNet responded to a request made to install marking balls onto the Salt Creek Wind Farm transmission line in accordance with clause 3 of AS 3891.2
4. The installation of the marking balls on the Salt Creek Wind Farm transmission line complied with AS3891.2
5. The Mortlake airstrip is considered by clause 5.8 of AS3891.1 as 'Situations not covered by this Standard'
6. The complainant may seek to negotiate the terms and conditions under which the existing marking balls could be replaced with an alternative size and colour
7. The complainant may seek resolution from Regional Airspace Advisory Committee (CASA) if they are not able to reach agreement with AusNet (refer to clause 5.8 of AS3891.1).