



## ATHRA Industry briefing

---

ONRSR Code of Practice – Level Crossings and Train Visibility

Author: Stuart Thyer  
Safety Manager, Cooma Monaro Railway  
Email: [Stuart.Thyer@athra.au](mailto:Stuart.Thyer@athra.au)

Issue date: 30 September 2024



## Introduction: Standard AS7531 Rollingstock Lighting and Visibility

In 2015, I was invited to join the development group reviewing Australian Standard AS7531 *Rollingstock Lighting and Visibility* on behalf of the T&H sector in response to the possibility that Australian Standards would be mandated in the rail industry.

The standard was designed for ‘new and modified’ rollingstock without allowing for the particular issues of heritage rollingstock. The standard was again updated in 2023 without T&H sector input. , [See the 2023 version of AS7531.](#)

Fast forward to January 2024 and ONRSR released the [Consultation Draft Code of Practice Level Crossings and Train Visibility \(the code\)](#), which was discussed at an [ATHRA members meeting](#) in March.

In subsequent discussions, ONRSR note that the code is for guidance only. However, non-compliance creates a risk to rail safety workers and assets. If RIMs (Rail Infrastructure Managers) and RSOs (Rolling Stock Operators) find an alternative compliance path, the code would be seen as the recognised standard in court.

Section 8 of the code sets out requirements for train conspicuity, using AS7531 as the technical standard. Most T&H railways are both the RIM and RSO of their railway and will need to consider how they implement the code or risk workshop alternative risk mitigations. We consider that mainline RSOs should assume that mainline RIMs will require RSOs to fully comply with AS7531.

**This is a critical shift in regulatory thinking; AS7531 will apply to existing rollingstock as well as new and modified rollingstock only.**

## Selective review of AS7531

RISSB has now invited ATHRA to join in a selective review of AS7531. This review will consider results from the Monash University study on strobe and beacon lighting, [Quantitative Assessment of Visibility of Modified Locomotive Lighting](#). RISSB is willing to review the issue of existing rollingstock, as the standard still states it being used for new and modified rollingstock only. This review will probably commence before the end of 2024 consider the scope of the standard as well as items highlighted in table 1.



Table 1:

**Current conspicuity requirements for new and modified rollingstock in AS7531**

Edited requirements most relevant to T&H operators. For complete list, please refer to the standard.

Sections highlighted are planned to be reviewed in 2024.

<b>Section 3. Headlights</b>
Trains operating speeds of 60 km/h+ and/ or weighing > 20 tonnes = min 200,000 candelas headlight Other requirements around focusing, angled spill of light, LED lights.
<b>Section 4. Visibility (ditch) lights</b>
Peak intensity 20,000-30,000 candelas. Requirements around height, focussing. Requirement (shall) for lights to flash after horn sounded.
<b>Section 5. Marker lights</b>
Min intensity 75 candelas, on permissive safeworking systems 100 candelas. RSO needs to demonstrate redundancy operation (battery backup?).
<b>Section 6. Number lights</b>
Illuminated boxes for safeworking systems where number of locomotive observance is required by other trains, e.g. Train order
<b>Section 8. Stop Lights</b>
On RRVs travelling >15km/h, required.
<b>Section 10. Emergency lighting</b>
Interior emergency lighting required.
<b>Section 11. Livery</b>
<ul style="list-style-type: none"> <li>Locomotives &amp; railcars shall have ‘high visibility livery design’ (hi-vis) applied.</li> <li>Front of vehicle. Hi-vis applied to minimum of 75% of the total available front facing areas of vehicle, noting there are technical rules around areas of application.</li> <li>Side of vehicle (locomotive or railcar). Hi-vis applied to 30% side of vehicle, on the leading end.</li> <li>Colours. Specific white, yellow and orange colours. No green or red on front of rolling stock.</li> </ul>
<b>Section 12. Reflective delineators</b>
Required on all rolling stock items.

**A way forward for the T&H sector**

The code is still in draft and hopefully ONRSR takes into account concerns raised by T&H groups. Given that AS7531 is being used as the technical standard supporting the code, it is vital that the T&H sector is able to have meaningful input into amending AS7531 to account for the disparate nature of T&H rollingstock and operations. There are a few ways this may be achieved:



## 1. Scope, Section 1.5.

The AS covers speeds up to 160 km/h but does not consider a minimum threshold speed (e.g. where a railway operates up to max 40 km/h). This could provide the ability to 'opt out' of AS compliance. It would also remove much of the need to provide a scalable standard which may prove easier for RISSB to write.

**and / or**

Create a new definition of 'closed' or 'fully controlled' railway that would cover railways with no public level crossings (LXs), a small number of 'low risk' LXs or where all public LXs are fully protected by boom barrier protection. This definition is potentially broad as it would cover both small T&H railways and networks like the Sydney metropolitan network and may need to be further split, but the intent is to add the definition alongside cane railways, light railways and monorails, currently not required to meet the standard.

## 2. Existing Rollingstock Requirements.

Current AS requirements cannot be met in many T&H settings. For example, hi-vis front colours, where many locomotives do not have sufficient useable space to incorporate this, either through shape, heat or overall small size of the locomotive. Lighting standards are difficult to achieve given the limited electrical output of much heritage equipment. Lobbying for the addition of an 'existing' rollingstock section into the AS, would only consider lighting and visibility requirements relevant to level crossing visibility and take into account real world examples of existing rollingstock. This section would take current conspicuity requirements (see table below), delete those not relevant to level crossing safety and review the remaining to ensure they are realistically applicable. This is especially important to mainline RSOs who may have little choice in compliance otherwise. There may be additional lighting requirements in the standard from the Monash review, such as strobe or beacon lighting requiring consideration.

## Your feedback

It is vital for ATHRA to be able to represent the best interests of the T&H sector. During review of AS7531, ATHRA representatives will take your views and concerns forward to be addressed in the AS. Therefore your feedback enables us to develop an industry voice. Please provide your feedback with:

- a) A short summary of your current or planned operations, especially in relation to level crossings.
- b) If you believe your operation could be excluded from the standard through 'scope' (low speed, low risk level crossings), and why.
- c) If your operation falls within mainline or 'higher risk' isolated line operation, which of the current conspicuity requirements are achievable, would need reworking in an 'existing rollingstock' section, or are not achievable.
- d) Any other comments.

Please send your feedback to [Stuart.Thyer@athra.au](mailto:Stuart.Thyer@athra.au). Any feedback comments made will be de-identified before being used in any ATHRA submission, unless specific permission is granted by that T&H railway.

When the proposed AS7531 goes out for public consultation you will be able to make direct comment considering the requirements of the T&H sector.



## In conclusion

I acknowledge the difficulties of risk management around level crossing safety. Some T&H operators have experienced this unpleasant reality ‘first hand’ and the subsequent consequences. The desire to do more to prevent further collisions needs to be balanced against economic cost and the potential change to the ‘look’ of heritage equipment.

Written with consideration of T&H concerns, AS7531 can be a practical tool for the industry rather than a blunt instrument unable to discriminate its effect on heritage rail equipment.