

Bringing Clarity to Australian Rail Industry Communication



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Executive Summary

Conundrum of Communication Confusion

The rail industry is multi-lingual; we aren't all speaking the same language. Yet, the industry must stay on track and keep rolling. Today, inconsistent rail terminology spans across operators, networks, disciplines, and jurisdictions. When everyone has a different name for the same concept, we introduce unnecessary complexity, operational delays, and material inefficiencies into our networks.

In a safety-critical environment, this isn't just a logistical headache—it is a **distinct operational risk**. Misunderstandings in the field can lead to dangerous outcomes.

Do we just accept the differences and risks, or is the conundrum worth addressing?

The Data: What the Industry is Telling Us

Through comprehensive industry surveys, worker interviews, deep-dive glossary analyses, and cross-company definitions register reviews—our data and research shows a stark, varied understanding of common terms:

- **93%** of survey respondents agree that inconsistent terminology introduces risk in safety-critical communications.
- **87%** agree that multiple different terms currently exist for the exact same concept.
- **85%** agree that standardised definitions would immediately improve consistency across the industry.
- Inconsistencies cross regional (state, national), operator and technical areas.
- Industry recognises the benefits, but there remains standards development, cultural, resourcing and capacity barriers.



The Verdict: There is undeniable industry support for a common rail language and a standardised approach. Industry reported that harmonisation and standardisation of terminology has potential benefits to interoperability, productivity and safety. The workforce wants this change.

The Value Proposition: Why Invest in Standardisation?

Investing in the harmonisation of our industry's language yields high-impact returns across five critical pillars:

-  **Safer Operations:** Reduces the risk of miscommunication, supporting confident, safer decision-making during operations, maintenance, construction, and emergency incident responses.
-  **National Alignment:** Helps rail safety workers operate seamlessly and confidently across different

networks and organisations without a linguistic learning curve.

-  **Clearer Communication:** Eradicates ambiguity, reduces rework, and creates a foundation for more consistent training and onboarding.
-  **Improved Interoperability:** Bridges the gap between disconnected operators and jurisdictions, creating a genuinely connected network.
-  **Greater Productivity & Efficiency:** Eliminates the friction, delays, and administrative bloat caused by translating terms between disparate company registers.

The Strategic Roadmap

Achieving this vision requires a structured, collaborative innovation process that brings the industry along for the journey:



Proposed strategies to motivate the industry include: aligning common practices between operators to support a common working language, creating a joint committee for standardisation of terminology, developing a non-mandatory standard of rail terminology, and leveraging current commitments to interoperability/productivity to fund the change management required for aligning terminology differences.

Navigating the Challenges

While the business case is clear, successful implementation will require actively managing a few industry realities:

- Overcoming deeply ingrained, legacy terminology habits.
- Managing natural resistance to change across diverse workforces.
- Aligning differing internal organisational documentation (including procedures, position descriptions, training and safety-related documents).
- Securing the dedicated resources (people, financial etc.) required to implement and sustain industry-wide adoption.

Conclusion & Next Steps: Moving Toward One Vision

Shared Language —> Better Communication —> Improved Rail Operations

Terminology standardisation is not an academic exercise; it is a practical, high-value opportunity to de-risk our networks and protect our workforce. The industry risks inaction leading to being directed to what the outcomes may be, which could lead to sub-optimal outcomes.

By investing in this initiative, we will pave the way for a more connected, efficient, and safer Australian rail industry.

1. Introduction

The problem, the need and a solution

The problem with non-standardised terminology

Australian Rail Safety Workers (RSWs) work within and across states and territories. In addition, RSWs work across disciplines, e.g. network control with the possession officer. This is overlaid with the need to address interoperability requirements on the National Network for Interoperability, which are identified freight and passenger corridors that are critical for national connectivity. Historically, rail operators have operated independently and developed their own ways of working, e.g. safeworking rules and procedures. Many major infrastructure projects also contract out to several organisations, all with their own reference points for similar processes or rail equipment parts. These factors combined have contributed to operational complexity, inefficiencies and risks to safety.

Specifically, differences in terminology between operators, rail infrastructure managers, suppliers, and rail safety workers is a simple factor that has been identified in the past as making operations challenging to navigate in an increasingly layered rail system.

Golden Gauge have attempted to understand the extent of terminology differences, with consideration to the viability of developing a standard to align terminology for RSWs and operators. The developed standard (and associated implementation activities) have the potential to sustain smoother, more efficient and safer operations for RSWs across disciplines and dispersed teams.

Scope of report

The scope of the report covers:

- The extent of non-standardised terminology in the Australian rail industry through a description of research methodology utilised and highlights of results
- How the general results can inform the way in which standardisation of terminology can benefit the rail industry
- Challenges and benefits in implementation and adoption, including how barriers can be overcome

The report does not include:

- A description of all terminology differences in Australian rail
- A draft of the developed aligned terminology standard
- Capturing all the potential issues in standardising terminology, including details for specific disciplines, e.g. signalling.

Standardisation as a solution

Alignment of rail terminology through a non-mandatory standard is being proposed in this report as a solution to fragmentation and supporting interoperability of railways across Australia. Having a common language in which to communicate both verbal and written information has benefits for rail efficiency, productivity, reliability and safety.

However, it is acknowledged that the implementation of a non-mandatory standard is dependent on factors beyond the publishing of a standard. Engagement and consultation from the rail industry and workers are crucial to its success.

Elements to consider include how to:

- bring awareness, familiarisation and translate adoption of the non-mandatory standard to the industry
- optimise the benefits of standardisation
- integrate the standard into operations across industry.

2. Overview of process & Results

Strategy to understand the extent of the issue

Overview of process

To capture the extent of the issue and where best to target terminology standardisation, Golden Gauge have relied upon a cumulative analysis from multiple sources:

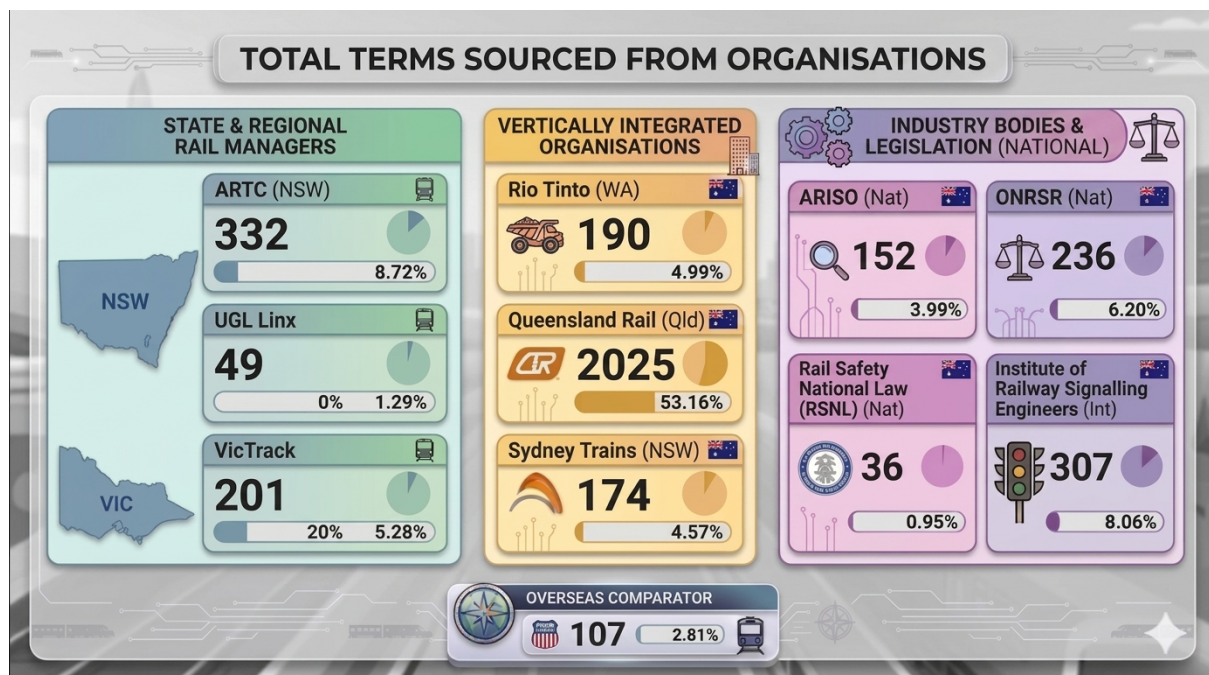
1. **Glossary analysis:** Publicly available glossaries across rail entities were obtained and analysed using both manual and Artificial Intelligence techniques to identify the key areas where terminology differed and would benefit from standardisation.
2. **Survey:** A survey was conducted to help the project understand the differences in rail terminology and the benefits of standardisation in different sectors.
3. **Interviews:** Interviews were conducted with a range of staff from rail operators, regulatory/standard bodies and infrastructure managers to understand the nature of the problem and how to address issues associated with terminology differences.
4. **Case studies/literature:** A summary of insights are described, drawing from discussions at the ARISO conference and rail research/literature. These help articulate the operational perspective and learnings from non-standardisation of terminology.
5. **Overall analysis:** Summarising the analysis from the multiple sources listed, Golden Gauge identified which areas of terminology a non-mandatory standard would be most impactful to industry- and how to implement it effectively.

Results

The following sections describe the results found from the research regarding terminology challenges, benefits and opportunities for implementing a non-mandatory standard.

Analysis of glossaries

As part of the data gathering phase, glossaries were sourced from eleven rail industry organisations. With the help of an AI agent we were able to extract the data from the range of sources into a standardised Excel format, which were then collated into a single combined sheet for further analysis. As QR maintains a combined “whole of business” style glossary it initially accounted for just over 60% of the 4512 entries sourced. To reduce potential bias in the data as much as possible we then elected to remove QR entries that did not relate to “core railway operations”, unless there was a corresponding entry of the same terminology from one of the other ten organisations already within the combined sheet - this reduced QR entries to 53%.



Number of terms and percentage of total sourced from each organisation, and the sector of the industry they represent.

Following this, over several rounds, we then used a variety of tools to highlight areas of potential conflict from the obtained data set for further scrutiny, listing:

- High variation in terms related to “level crossings”
- Variation across a number of duty based roles and procedures
 - Pilots, Lookouts, Controllers, Signallers
 - The forms they issue
 - The functions they perform
 - Rail Safety Worker vs Qualified Worker vs Competent Worker
 - “Track Work Authorities” (TWA) and other methods for track access

Term	Acronym	Definition	Organisation
Track Work Authority	TWA	An authority used to manage work on track where rail traffic is permitted to pass through the worksite under strict controlled conditions.	Linx
Track Work Authority	TWA	An authority used to manage work on track where rail traffic is permitted to pass through the worksite under strict controlled conditions.	Sydney Trains
Track Work Authority		Authority for non-exclusive occupancy of track by track workers and equipment within specified limits.	ONRSR
Track Work Authority		An Authority for non-exclusive occupancy of track by track workers within specified limits	QR
Track Work Authority	TWA	An authority for work on track that does not require the line to be closed.	ARTC (NSW)

Examples of "Track Work Authority" definitions across multiple organisations.

We found there was a correlation between the findings in the glossaries and some of the key issues or themes conveyed through feedback via respondents to the survey and interviews.

Survey Findings

The survey was distributed to rail industry professionals across Australia, yielding 61 responses from practitioners spanning operations, engineering, maintenance, infrastructure, policy, and regulation.

Defining the problem

The results leave little room for ambiguity. Across roles, jurisdictions, and sectors, **Australian rail professionals consistently identify terminology inconsistency as a present and consequential problem, one that introduces safety risk, impedes knowledge transfer, and generates real operational friction in the form of delays and rework.**

The strength of agreement on safety risk was at 93% and unanimous among Operations and Maintenance respondents. This finding elevates the issue of terminology inconsistency beyond an administrative inconvenience and positions it as a governance and risk management priority.

Equally telling is the 85% agreement that standardisation would improve consistency, with zero respondents disagreeing. This result signals not just awareness of the problem but genuine readiness for a solution. The data does not present a divided industry debating whether terminology matters; it presents a united one waiting for someone to lead the response.

The key takeaways

Survey statement alignment	Insight sentiment
Inconsistent terminology introduces risk in safety-critical communications	Highest concern at 93% indicative agreement; direct safety link
Multiple different terms exist for the same concept	Near-universal acknowledgement
Standardised definitions would improve consistency	Strong consensus on action
Knowledge transfer is affected by terminology differences	Significant operational friction
Misunderstandings have caused delays or rework	Real operational impact confirmed
Governance decisions are slowed by terminology disagreements	Least acute (43%) but still notable

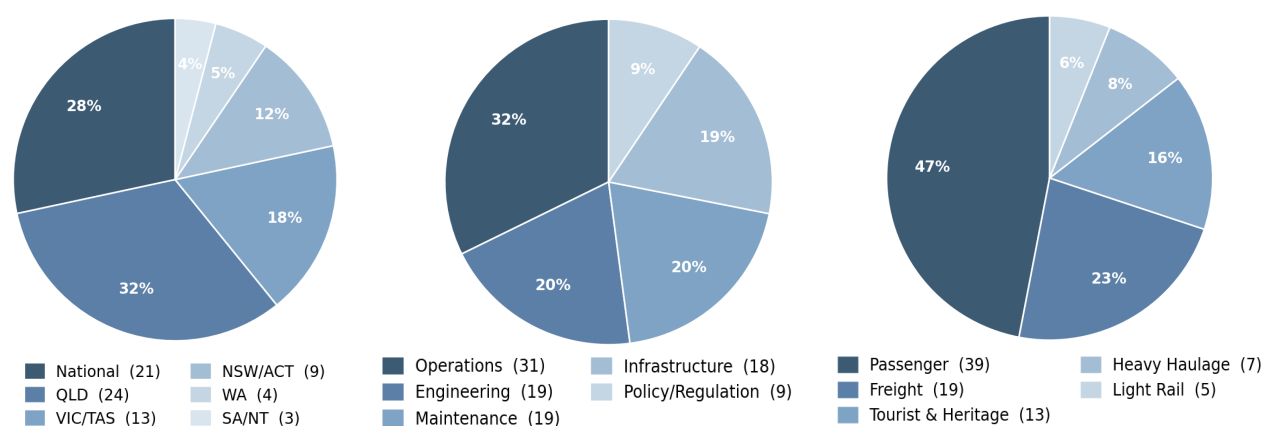
This table is a snapshot of what the key takeaways are from the survey. This summary table illustrates:

- the high-level critical insights from our primary research,
- what the insights represent for stakeholder thinking, and
- the level of acknowledgement for said insights.

Respondent profile

The survey drew 61 responses from a diverse cross-section of the Australian rail industry.

Respondents by region, role and sector; n=61



Note - the sample size for the survey (n-value) amounts to 61. It may appear inconsistent with the sum of correspondents because the participant demographic questions were "select all that apply" type of questions.

Role seniority ranged from frontline train drivers and safety officers through to directors, executive leaders, and advisors, ensuring the findings reflect both day-to-day operational realities and strategic industry perspectives. Further information related to demographics of respondents can be found in Appendix B.

The survey included Likert-scale statements on the nature and impact of terminology inconsistency, open-ended questions on priority areas, and practical naming exercises designed to surface real-world divergence in common terminology.

Respondent alignment on key statements

Statement	% Agree / Strongly Agree
Inconsistent terminology introduces risk in safety-critical communications	93%
Multiple different terms exist for the same concept	87%
Standardised definitions would improve consistency	85%
Knowledge transfer is affected by terminology differences	73%
Misunderstandings have caused delays or rework	56%
Governance decisions are slowed by terminology disagreements	43%

Crosstabulation Analysis: respondent functional roles and agreement on risk to safety critical communications

Functional Role	Strongly Agree	Agree	Neutral	Disagree	% Agree+
Policy / Other	9	5	3	2	74%
Operations	6	7	0	0	100%
Engineering	6	11	1	1	89%
Maintenance	6	4	0	0	100%

Note - respondents rated their level of agreement to the statement “Inconsistent terminology introduces risk in safety-critical communications.”

The results indicate the roles closest to the “coalface” unanimously agree with the statement, while “Policy and Other” is the lowest at 74%, it still reflects a strong majority but likely results from the greater distance these roles have from real-time operational risk. This trend was also reflected in responses to the problem statements, however it could be that the issue is less visible or less consistent at this level, rather than not being present at all.

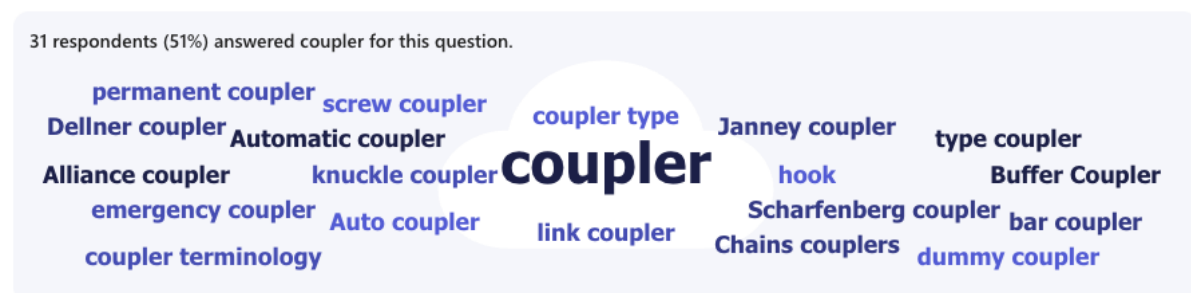
The headline finding is that concern about safety risk is not confined to any one discipline. It is the most consistent result across the entire survey, and the one area where functional background makes the least difference to the response. If there is a single platform on which to build the case for standardisation, this is it.

Naming Diversity Analysis - Word Cloud

The naming diversity exercises embedded in the survey were designed to test the problem in practice rather than in principle, and the results are instructive. When shown a photo of a single, commonplace generic rail structure, respondents produced more than 15 distinct names, ranging from *signal box* and *signal cabin* through to *signal tower*, *signalling equipment room*, *station house*, and *guard room*.



The coupler photo identification exercise was similarly revealing, with a single automatic coupler type attracting names including *knuckle*, *Janney*, *AAR*, *buckeye*, *auto*, and *alliance coupler* interchangeably.



Turnout components photo fared no better, with terms such as *frog*, *V-crossing nose*, *crossing nose*, *common crossing*, and *flangeway* used by different respondents to describe the same component.

What makes this significant is not the volume of variation alone, but its source. These responses came from experienced practitioners like engineers, safety officers, train drivers, and directors, not novices. The diversity of naming reflects genuine, entrenched differences in how the industry has been trained, documented, and operated with rail terminology across state boundaries over decades. In a safety-critical environment where radio communications must be precise and unambiguous, this level of terminological dispersion is not a curiosity. It is a risk factor.

The naming exercises provide the clearest and most tangible evidence in the entire survey that the problem is real, immediate, and embedded in everyday practice. And it shows different people from different areas are not thinking in a standardised way.

Interviews

Of the twenty-six survey respondents who indicated an openness to be contacted for further discussion on the topic, eight were randomly selected to be interviewed. The standard set of questions for the interviews can be found in Appendix C. The following section summarises the key themes arising from the interviews, including examples of how terminology differences have impacted the Australian Rail industry.

Key themes from the interviews

Operational impacts

Network rules and procedures

Multiple interviewees provided examples of different network rules and procedures from different rail infrastructure managers, and pointed out some specific terminology examples. Eg. 'Absolute Signal Blocking' is used by ARTC and Sydney Trains, however UGL Regional Linx currently call the same term 'Control Signal Blocking'. If one is a driver across NSW, they would be expected to know the different terminologies used for whenever they crossed changed RIM territories. Other examples include names for 'tags' aka 'consist, train, rake, string'. Differences in how to bring a train to a stop by using 'red light' or 'stop stop', 'mayday' vs 'emergency'. This is apparent with multiple companies using the same network and yet all communicating safety critical words differently.

Radio communications

An interviewee reported that standardisation of terminology over radio is critical as depending on the geographic area, signal shielding, transmission issues mean there is a strong emphasis on short messages that are clear and support safety. An example is when inspections are done on shunting at a mine site and the terminology used to disconnect and reconnect the wagons from somewhere past the consist can be called 'entering profile' 'within consist' or 'entering the line of fire'. This can reflect differences between moving crew, ground crew and between organisations. The interviewee satiated that there can be five different terminologies to describe the same thing.

Driver training

Interviewees identified that terminology used to train drivers may not be consistent due to the operator they are working with. An example in Victoria is Metro Trains Melbourne using 'transmitted' as an authority whilst V/line refers to authorities being 'read'. Authorities are sometimes referred to 'dictated' or 'verbal' and these differences are all within the same state.

Specific terminology issues

An interviewee described NSW, VIC, SA and WA labelling clearing points after the signal name from which the aspect steps to the most restrictive aspect. This is in contrast to QLD which

names the clearing point after the signal from which it gives an overlap. This means they are a block different from one another between states.

Asset performance terminology can also be different, eg. ‘headway’ vs ‘technical headway’. There was also mention of a lack of precision in terminology around timetabling, which could result in misunderstandings for those who do not work with the organisation that the timetable applies to.

Conceptual issues

Rolling stock certification

An interviewee discussed that there are still misunderstandings and confusion on conceptual terms like ‘certification’ and ‘registration’ of rolling stock. One refers to the rolling stock as a vehicle being certified, versus the train being approved to run on the network. Certification occurs prior to registration, with train network approval being the final stage. Additional complexity is added when certain parts require approval, e.g. a new wagon, but then the network operator/RIM needs to approve the train again as a separate process. Overall, it was identified that the definition for rolling stock approval and train approvals (for the network) isn’t sufficiently defined or understood enough in industry so when focusing on rolling stock approvals, there is discussion on train approval. The confusion adds complexity and delays to having new aspects of rolling stock on the network.

Changes of meaning over time

An interviewee provided an example of the meaning of ‘Open level crossing’ changing in the last 20 years from being a passive level crossing (no lights, bells or booms) to mean any level crossing. There is an opportunity to be more precise and consistent to describe level crossings to say they are either ‘active’, ‘passive’ or ‘a level crossing with lights, bells and booms.

Term	Definition	Organisation
Open Level Crossing	A level crossing that has no gates or barriers, relying entirely on traffic signs or flashing lights to warn road users.	IRSE
Open level crossing	(See Public Level Crossing)	QR
passive level crossing	A level crossing that has road STOP signs.	Rio Tinto
Passive level crossing	A level crossing where the movement of vehicular or pedestrian traffic across a level crossing is controlled by signs and devices, none of which are activated during the approach or passage of rolling stock, and which rely on the road user including pedestrians detecting the approach or presence of rolling stock by direct observation.	ONRSR
Passive level crossing	A level crossing where the movement of vehicular or pedestrian traffic across a level crossing is controlled by signs and devices, none of which are activated during the approach or passage of rolling stock, and which rely on the road user including pedestrians detecting the approach or presence of rolling stock by direct observation.	RISSB
Public (or open) level crossing	A level crossing for use by the general public, both vehicular and pedestrian.	QR
Public Level Crossing	A&A Level Crossing provided to maintain continuity of a public vehicular thoroughfare across a railway at grade and available for use by the general public.	QR

“Open level crossing” showing definition variation across organisations as referenced in the interview response.

Term	Definition	Organisation
Level Crossing	level crossing includes each of the following areas: (a) an area where a road and a railway (other than a tramway) meet at substantially the same level, whether or not there is a level crossing sign on the road at all or any of the entrances to the area; (b) an area where a road and a tramway meet at substantially the same level and that has a level crossing sign on the road at each entrance to the area; (c) a pedestrian crossing— (i) being an area where a footpath or shared path crosses a railway (other than a tramway) at substantially the same level, whether or not there is a level crossing sign on the path at all or any of the entrances to the area; or (ii) being an area where a footpath or shared path crosses a tramway at substantially the same level and that has a level crossing sign on the path at each entrance to the area;	RSNL; ONRSR; ARISO
Level Crossing	An interface at the same level (grade crossing) between a railway line and a road, footpath, or public path.	IRSE
Grade Crossing	An intersection where a roadway or pedestrian path crosses a railway track at the same elevation level.	Union Pacific
	(1) A location where a public or private roadway, footpath, or both, crosses one or more railway track at grade (at the same level). (OC-G1) (2) A location where the railway line and a road or pedestrian walkway cross paths on the same level. (3) Any crossing of a railway at grade, providing for both vehicular traffic and other road users including pedestrians.	
Level Crossing	(4) An area where a road and a railway meet at substantially the same level, whether or not there is a level crossing sign on the road at all or any of the entrances to the area.	QR
Level Crossing	A location where a road, footpath, or access track crosses a railway line at the same level.	Sydney Trains
Level Crossing	A location where the railway line and a road or pedestrian walkway cross paths on the same level.	VicTrack; Linx
Level Crossing	A location where a road or path crosses a railway at the same level.	ARTC (NSW)
level crossing	A location where a road crosses a railway track.	Rio Tinto

“Level Crossing” definitions across multiple organisations. ONRSR and ARISO share the RSNL definition, Queensland Rail’s definition is in four parts which closely (but not precisely) mirror this definition when combined. Other organisations feature variants of the IRSE definition, with reductions in wording likely specific to the environment the railway operates in.

The glossary findings seem to validate the sentiment conveyed in the interview response. It also highlights that there are commonly used terms that are often not recorded, the definitions are open to interpretation, or commonly misapplied which can lead to terminology creep over time and variation across entities.

Interview Summary

Interviewees provided insight on how the standardisation of terminology presents itself as having both operational impacts (e.g. safeworking/network rules, driver training, confusion with signalling, asset manager) and wider systemic impacts (e.g. rolling stock approvals, how terminology develops over time). Interviewees also highlighted significant industry barriers to terminology standardisation highlighting cultural issues, resource capacity, supply chain and differences in operations both within and across operators. Although challenges exist, interviewees pointed to industry motivation for change- stating that there are real opportunities in aligning practices to facilitate terminology standardisation, having operators see the benefits through joint collaboration and an industry already motivated to achieve interoperability, productivity and safety improvement goals.

Case Studies

Golden Gauge conducted secondary research by collating case studies where standardisation of terminology presented itself as a contributing factor to safety. These cases serve as supplementary points to our primary research.

Mars Climate Orbiter

The catastrophic loss of the 1999 Mars Climate Orbiter - caused because software from Lockheed Martin used imperial units while NASA used metric - underscores that documented standards are not enough to prevent critical errors, as people often fail to notice discrepancies that look familiar to them. This historical failure serves as a cautionary tale for any efforts to implement a standardized glossary over the National Network of Interoperability; survey and interview data highlight that forcing people to abandon deeply ingrained, legacy terminology will inevitably lead to oversight errors that go completely unnoticed until an incident occurs.

The French Room

The "French Room" was a dedicated training space in the Ashford IECC where English-speaking train controllers were taught French, a practice sparked by an incident where a panicked French driver reverted to his native tongue during an emergency in an English yard. Recognizing the well-documented human tendency to drop a second language under extreme stress, authorities deemed it more practical to train controllers to understand French than to expect drivers to maintain English in a crisis. This scenario mirrors the modern challenges facing Australian railways; while they do not share the same international language barriers, the network suffers

from significant regional variations in terminology born from historically fragmented systems, presenting a similar risk where communication could break down during high-pressure situations.



Ashford IECC.

Football

The term “football” has come to mean many things - in Australia across the breadth of the NNI it would generally be used referring to Australian Rules or Rugby League. Looking further afield this could be expanded to include Rugby Union, Gridiron, or Gaelic variants. Most popular globally is to use the term with reference to Soccer. While often the subject of healthy debate, none of these are definitively correct, nor incorrect - the etymology of the word “football” stems from a variety of games in medieval Europe which were played on foot, usually by peasants, as opposed to horse-riding sports engaged in by the aristocracy. While not a railway example it highlights some of the challenges that could be faced while trying to standardise terminology in the railway context - the local dialect is ingrained, almost worn as a badge of honour, and it would be nigh on impossible to convince a region to adopt conflicting terminology from another. However, even if not enforcing full adoption, when in a particular region it is still very useful to understand the local dialect.

ARISO Conference Discussions

The importance of facilitating interoperability, productivity and safety were key themes discussed during the 2026 ARISO Conference. Supporting these conversations were specific examples highlighted of the benefits of standardisation of terminology.

- **Mel Alessandri (V/line)** highlighted how her project team developed a new System Safety Guideline, which aligned terminology alongside V/line and MTM infrastructure gates to provide clarity on how to jointly demonstrate that the rail network was safe so far as reasonably practicable.
- **Stephen Lemon (NTC)** noted the importance of having nationally consistent processes and ways of working as part of the National Rail Action Plan. This would help support the rollout of ETCS for the National Network for Interoperability. Golden Gauge notes that terminology standardisation could be part of this process.
- **Brad Moorhouse (ARTC)** reported that ARTC has been working on a national safeworking framework, with nationalising rules and procedures for the ARTC network. They withdrew 70 rules, replacing them with a set of 35 national rules, which would overall help drive interoperability. Golden Gauge note as part of this project, alignment of terminology would be key.
- **Kerry Russell (OTSI)** discussed the benefits of harmonisation in training to improve rail safety and productivity. Harmonisation of training was seen as an opportunity to reduce the risk of a qualified worker operating inconsistently with the requirements of their new location by ensuring rail safety worker skills and knowledge could serve the rail network as a whole. Interoperability and standardisation of terminology would be part of this process.
- **Phil Ellingworth (Metro Trains Melbourne)** stated in the Chief Engineer's Panel that the more standards are harmonised, the less local involvement and costs involved. He noted the need to identify the products, systems and technologies that the industry needs to support the standardisation. Golden Gauge suggests that the standardisation of terminology would be a strong step in this direction.

Case Studies Summary

The case studies illustrate how terminology differences have had substantial impacts to safety (Mars Climate Orbiter), safety critical communications (The French Room), international communication and mutual understanding (Football). Terminology alignment was also a key factor in supporting different projects across the rail industry as reflected in the ARISO conference discussions. Examples provided include supporting project delivery, interoperability, safeworking rules and development of standards.

Summary of Results

- Multiple inconsistencies in rail terminology currently exist in the Australian industry. The inconsistencies cross regional (national, state), operator and technical areas.
- Participants in surveys and interviews agree that lack of standardisation in rail terminology has a safety impact.
- Harmonisation and standardisation of terminology has potential benefits to interoperability, productivity and safety.
- Industry recognises the benefits, but there remains standards development, cultural, resourcing and capacity barriers.
- However, the industry is motivated to standardise terminology, with projects already underway (e.g. ARTC) to start the process to reap the benefits of interoperability and safety.

3. Implementation and adoption

The results point to one consistent imperative: standardisation must be led, not merely endorsed. The appetite exists, the evidence is clear, and the practitioner network is keen. What has prevented progress historically is the absence of a mandated lead and a coordinated governance structure. The NTC, given its national reform mandate and cross-jurisdictional reach, is uniquely positioned to fill that role.

Elements to consider include how to:

- bring awareness, familiarisation and translate adoption of the non-mandatory standard to the industry
- optimise the benefits of standardisation
- integrate the standard into operations across industry.

Our flow chart model for implementation

We are dividing our model into three phases of time - immediate, medium term, and long term. The elements will be applied in a non-linear fashion, but follow a general flow as illustrated below:



Immediate Priority Action: Address the Safety-Critical Gap

The *Why*...

93% of respondents identified inconsistent terminology as a safety risk. Real incidents (see Interview and Case Study sections) have already been linked to terminology misalignment in safeworking and georeferencing contexts. This is the most urgent and defensible basis for action.

Tactics would include:

- **Establishing a national terminology working group** with representation from operators, regulators (ONRSR, ARTC), and the NTC, focused initially on safety-critical operational and safeworking terms where miscommunication carries the highest immediate consequence. If operators and RIMs can identify the common practices that would benefit from terminology standardisation, then this would support the development of common terminology. The aim of the working group would be to come together to seek clarity and commonality, so that agreement can be achieved on common language, identification of safety-critical terms and long-term strategy.
 - a. *Flow chart elements: Stakeholder engagement, Identify Issue*
- **Develop a prioritised glossary of safety-critical terms** covering operations and network communications, including train movements, track protection, possession authorities, and signalling, as the minimum viable standardisation output.
 - a. *Flow chart elements: Develop standard, Identify Issue, Pilot*
- **Align with existing regulatory touchpoints**, including ONRSR safety management system requirements and the National Rail Safety Law, to embed standardised terminology into compliance frameworks rather than treating it as a parallel voluntary effort.
 - a. *Flow chart elements: Stakeholder engagement, develop standard*

Medium-Term: Systematise Across High-Impact Domains

The *Why*...

Operations (42 nominations) and Network (32 nominations) were the top priorities identified by respondents, with Technical Design (24) and Rolling Stock (22) close behind. Knowledge transfer was affected for 73% of respondents, and delays or rework confirmed by 56%, indicating that beyond safety, there are measurable efficiency and workforce costs to inaction.

- A. **Extend the glossary to cover network, technical design, and rolling stock terminology**, building on the safety-critical foundation established in Section 3.2 Immediate Priority Action and drawing on the pool of practitioners who volunteered for further engagement through the survey.
 - a. *Flow chart elements: Identify issue, Pilot*

- B. **Integrate standardised terminology into national training and accreditation frameworks**, particularly for nationally recognised qualifications, to ensure that new entrants to the industry are trained in consistent language from the outset and that cross-jurisdictional mobility is not impeded by terminological differences.
 - a. *Flow chart elements: Stakeholder engagement, Pilot*
- C. **Conduct a structured audit of existing state-based rule books, standards, and operational procedures** to identify and catalogue divergent terms, creating an evidence base for the rationalisation work ahead and preventing new documentation from perpetuating existing inconsistencies.
 - a. *Flow chart elements: Identify issue, Develop standard*

Long-Term: Embed Standardisation as Industry Infrastructure

The *Why*...

The survey's 85% agreement that standardisation would improve departmental consistency, combined with zero disagreement, signals that the industry views this not as a one-off project but as an enduring organisational need.

Several respondents also pointed to the EU TSI framework and the ETCS/TMS rollout as creating external pressure for alignment, meaning the cost of continued fragmentation will rise over time as interoperability demands increase.

- A. **Develop and maintain a living national rail terminology register**, governed collaboratively by the NTC, ONRSR, and industry bodies, that serves as the authoritative reference for terminology across all domains and is updated as technology, practice, and regulation evolve. This would be the basis of the non-mandatory standard.
 - a. *Flow chart elements: Industry adoption, stakeholder engagement*
- B. **Align Australian rail terminology with international standards where applicable**, particularly the EU TSI and ISO rail standards, to future-proof the framework against growing cross-border interoperability requirements and reduce friction for international suppliers and rolling stock manufacturers operating in the Australian market.
 - a. *Flow chart elements: Identify issue, Develop standard*
- C. **Build terminology standardisation into the broader national interoperability agenda**, positioning it as enabling infrastructure for ETCS deployment, workforce mobility policy, and cross-operator coordination rather than a standalone linguistic exercise.
 - a. *Flow chart elements: Industry adoption, Pilot*
- D. **Resourcing change management for interoperability and productivity**. Industry would need to learn to view terminology differences as symptoms of the rail system, and therefore to be addressed through the lens of change management and ensuring resources are dedicated to it. This could be supported by the push for interoperability and other tactics described in this implementation plan. As part of this inevitable change, dedicated resources should be used for the standardisation of terminology to support efficient and safe rail operations.

- a. *Flow chart elements: Industry adoption, stakeholder engagement*
- E. **Evaluate progress of the national terminology working group** and its influence in supporting terminology adoption, standard development, training frameworks, national rail terminology register and ETCS/interoperability projects. Utilise the working group to consolidate national strategy and overcome systemic/industry wide barriers.
 - a. *Flow chart elements: Industry adoption, stakeholder engagement*

Barriers and how they will be overcome

Our research has found that the current state of the Australian Rail industry is complex with approximately:

- ★ 8 major rail infrastructure managers
- ★ Numerous additional suburban, private and registered RIMS
- ★ Over 50 rolling stock operators
- ★ 18 separate rail networks
- ★ 11 signalling systems
- ★ 12 different rule books (although ARTC are harmonising theirs)
- ★ 141 registered training organisations

The following sections summarise the identified barriers from research and show links to implementation solutions described in Sections 3.2-2.4.

Identified barriers from research and solutions

Different operational rulebooks and terminology

It was identified that network control officers may only know the one network rule book and not the others that rail safety workers may be exposed to in the nature of the work. There are also Possession Officers who use the network rule/procedure book. An additional layer of complexity in this is that definitions within the rules can have slightly different meanings. These are both definitions of 'Absolute Signal Blocking': 'Identify the track or tracks ASB will be applied to' (ARTC) vs 'define the limits between to which track is being blocked' (UGL).

Implementation solution(s): Conduct a structured audit of existing state-based rule books, standards, and operational procedures, align with industry regulatory touchpoints, establish a national terminology working group, national living terminology register, develop prioritised glossary of safety-critical terms, integrate standardised terminology into national training and accreditation frameworks

Imported rail technologies

Many forms of rail technologies, equipment, rolling stock, parts and infrastructure are imported from overseas. This can mean differences in terminology that need to be aligned for the Australian context. An example is for in-cab digital train control, the European Train Control System (ETCS) and associated standards cover the UK and Europe, however the American

system is called Positive Train Control (PTC) and draws on a slightly different set of standards and systems based on American railroads - both systems issue “movement authorities”. Third party suppliers may also have priority naming for equipment that provides similar functions in Australia, so it can be difficult to standardise terminology when replacement parts are required.

Implementation solution(s): Align Australian rail terminology with international standards where possible, resourcing change management for interoperability and productivity, aligning with industry regulatory touchpoints, develop a glossary of safety-critical terms, extend the glossary to cover network, technical design, and rolling stock terminology.

Cultural issues

Multiple interviewees reported that a barrier to change is that many organisations feel it’s important to have their own unique way of doing things. Reasons cited as to why organisations feel it important to have their own terminology differences include:

- Attracting employees as a brand- employees have a unique way of talking, working, and this proposed as a value proposition to employees/future employees so that they can feel closer to the organisation
- Preferences of long term employees- Long term employees are used to certain terminology and possess a mentality of ‘always doing it this way’ which can be threatening to challenge if terminology changes are suggested. An interviewee also expressed that it could have impacts psychologically to expect experienced workers to make changes after 40 years.

Implementation solution(s): Establish a national terminology working group, conduct a structured audit of existing state-based rule books, standards, and operational procedures, resourcing change management for interoperability and productivity, integrate standardised terminology into national training and accreditation frameworks, evaluate progress of national terminology working group, build terminology standardisation into the broader national interoperability agenda

Supporting systems change

Multiple interviewees highlighted the challenges of implementing terminology changes within organisations and using a systemic approach. These include:

- Many of the current standards used are non-mandatory, meaning that organisations will still choose their preferences for ways of working. This is also exacerbated by standards committees not necessarily made up of representatives that have the industry’s interests at heart.
- Resourcing the change - organisations can be stretched from budgetary perspectives and terminology alignment may not be the priority. There would need to be dedicated change management teams to ensure alignment of terminology across the organisation. Workers will also need to be taken off current work in order to be retrained in the new terminology.

- Systems and documentation change - Terminology changes would have flow-on effects on current documentation within organisations. Changes would need to be made to whole suites of documentation, including documents such as role descriptions, contracts.

Implementation solution(s): Establish a national terminology working group, resourcing change management for interoperability and productivity, integrate standardised terminology into national training and accreditation frameworks, evaluate progress of national terminology working group, build terminology standardisation into the broader national interoperability agenda

A summary of adoption barriers and mitigations throughout the implementation plan can be found in Appendix D.

What benefits will be realised from implementing this project



Our implementation approach is multi-faceted, designed to address the barriers identified from our research and helps bring awareness, familiarisation and translate adoption of the non-mandatory standard of standardising terminology to the industry. Golden Gauge focused on a stakeholder engagement approach to effectively integrate the standard into operations across industry and optimise the benefits of standardisation by using a staged and targeted roll-out.

By enhancing the clarity of rail communications, we are delivering a fundamental message that innovation does not only lie with technology — that innovation can be process improvement.

“Innovation in this project is the improvement of communication systems through harmonisation.”

This project can deliver:

1. A **future-ready, shared rail language across states** to transform fragmented communication into a more consistent, safer, and efficient way of working across the industry. This includes reducing ambiguity between operations, maintenance, and construction activities. Supported by a national terminology working group, priorities are strategically implemented with common barriers and knowledge shared for industry co-creation and smarter standardisation.
2. A **scalable, digital and adaptable framework** that can evolve with future rail technologies, operational complexity, and changing workforce needs (including providing better onboarding and training consistency for future rail workers). The non-mandatory standard serves as a platform for the national live rail terminology register.
3. Support for the rail industry to operate as **one connected national system rather than separate state-based teams**, improving collaboration, knowledge sharing, and interoperability across disciplines and regions. Consistent language will add increased efficiency in documentation, reporting and incident response.

4.0 Conclusion



Harmonising rail nomenclature improves safety by reducing communication errors and ambiguity during the design, implementation, and operational stages, helping protect lives, assets, and railway operations. A shared rail language enables clearer decisions, safer execution, stronger operability, and more reliable business outcomes across states and disciplines.

By investing in this initiative, we will pave the way for a more connected, efficient, and safer Australian rail industry.

5.0 Appendices

Appendix A: Additional limited analyses of acronyms

Following the data gathering phase, it was decided to focus on expanded terminology rather than also incorporating acronyms. While some exclusive acronym only lists were also obtained from a number of industry sources, they were not used for the overall analysis. Should there be interest in developing a standardised glossary of terms, then expansion of this scope to also include a standardised acronym list would be sensible. The following show examples of several acronyms used in Queensland Rail which already have a degree of common use and are used to reference specific items:

- UTC
 - Coordinated Universal Time, a method of timezone categorisation
 - Universal Traffic Control, the QR system used to control colourlight signalling
- EMU
 - Electric Multiple Unit, self-propelled train consist with a pantograph for OHLE
 - Electric Multiple Unit, original class of QR electric trains numbered 01-88
- TMS
 - Train Management System, generic language related to a human machine interface (HMI) for a railway signalling control system
 - Train Management System, specifically related to the Ansaldo ETCS L2 Phoenix HMI
- RTC
 - “RTC” was highlighted through the glossary analysis as a potential source of confusion, the acronym potentially meaning either Rail Tank Cars (eg a fuel wagon) or Rail Traffic Crew depending on the organisation, with hazards arising from the use of the acronym in safety or emergency situations in settings where the two converge, such as in a yard.

No further analysis on acronyms has been undertaken at this time. Other areas that could also be explored in the future include **phonetics** and **procedure** contradictions.

Appendix B: Survey respondent data

Geographic coverage, n=61

Region	Respondents	% of Total
National	21	34%
QLD	24	39%
VIC/TAS	13	21%
NSW/ACT	9	15%
WA	4	7%
SA/NT	3	5%

Functional roles, n=61

Role	Respondents	% of Total
Operations	31	51%
Engineering	19	31%
Maintenance	19	31%
Infrastructure	18	30%
Policy/Regulation	9	15%

Industry sector, n=61

Sector	Respondents	% of Total
Passenger (metro, urban, regional, high speed)	39	64%
Freight	19	31%
Tourist & Heritage	13	21%
Heavy Haulage	7	11%
Light Rail	5	8%

Appendix C: Interview questions

The interview consisted of four standard questions:

1. Are there any pain points that you might think terminology standardisation might benefit? Which area would they relate to?
2. If you experience differences in terminology in your day-to-day, what are some barriers that may prevent this from being addressed?
3. Would you have any comments or opinions on how terminology inconsistencies can be resolved, if applicable?
4. Other notes of interest (e.g. other comments from participant)

Appendix D: Summary table of adoption barriers and mitigations

The table below summarises the barriers identified and the mitigations from our implementation plan.

Barrier	Mitigations and potential implementation solutions
Different operational rulebooks and terminology	• Conduct a structured audit of existing state-based rule books, standards, and operational procedures • Develop a prioritised glossary of safety-critical terms • Develop and maintain a living national rail terminology register • Establishing a national terminology working group • Align with existing regulatory touchpoints • Extend the glossary to cover network, technical design, and rolling stock terminology
Resistance to change (cultural)	• Resourcing change management for interoperability and productivity. • Establishing a national terminology working group • Integrate standardised terminology into national training and accreditation frameworks • Conduct a structured audit of existing state-based rule books, standards, and operational procedures • Evaluate progress of the national terminology working group
Resistance to change (systems)	• Build terminology standardisation into the broader national interoperability agenda • Establishing a national terminology working group • Align with existing regulatory touchpoints • Conduct a structured audit of existing state-based rule books, standards, and operational procedures • Develop and maintain a living national rail terminology register • Resourcing change management for interoperability and productivity. • Evaluate progress of the national terminology working group
International railway assets/technology within the Australian industry	• Establishing a national terminology working group • Develop a prioritised glossary of safety-critical terms • Align with existing regulatory touchpoints • Develop and maintain a living national rail terminology register • Extend the glossary to cover network, technical design, and rolling stock terminology • Align Australian rail terminology with international standards where applicable