# Preparation of a Rail Safety Management System Guideline



OFFICE OF THE national rail safety regulator

## Version History

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# 1 Introduction

## 1.1 Purpose

The purpose of this guideline is to provide accredited rail transport operators, and those seeking accreditation, with guidance on:

- the legislative requirements for safety management and what the National Rail Safety Regulator (NRSR) looks for when assessing the safety management system; and
- how to prepare a safety management system that complies with the legislative requirements.

## 1.2 Content and status

This guideline comprises two main sections. The first provides a plain English explanation of requirements in the RSNL relevant to the safety management system and what the NRSR looks for when assessing the safety management system.

The second section explains the basic steps that a rail transport operator may follow to develop a safety management system that is compliant with rail safety legislation. It explains and places in context the various mandatory elements of the safety management system to make it clearer how the system fits together and may be integrated with broader management systems and processes of the rail transport operator.

Appendix 2 provides a list of resources that may be of further assistance to a rail transport operator when they are developing their safety management system.

The guideline is a guide only and is intended to be read in conjunction with the legislation and relevant ONRSR policies. The guideline itself imposes no legal duty and where actions or requirements are described as mandatory these reflect requirements in the Rail Safety National Law (RSNL) or National Regulations. It is not intended to replace the legislation, or to limit or expand the scope of the legislation. In the event of an inconsistency between this guideline and the legislation, the legislation will prevail. It is recommended that you obtain your own, independent legal advice about the legislation or contact the ONRSR for further information.

There is no requirement that a rail transport operator's safety management system be structured, or presented, exactly in line with the structure of the legislation or this ONRSR guideline. The primary objective is to ensure that the people who use the system find it comprehensible, that it is as simple and user friendly as reasonably possible and achieves the objective – a high level of safety awareness and commitment throughout all levels of the rail transport operator.

## 1.3 Definitions

Definitions provided by the RSNL and National Regulations apply within this guideline.

Use of the word 'consider' or 'may' indicates an option however the rail transport operator is free to follow a different course of action provided that it complies with the legislation.

Use of the word 'should' indicates a recommendation of the ONRSR, however the rail transport operator is free to follow a different course of action provided that it complies with the legislation.

Use of the words or terms such as 'must' or 'mandatory' indicates a legal requirement exists, with which compliance is necessary.

Where terms are not defined within legislation the Macquarie Dictionary definition applies.

## 1.4 Legislation and policy

Accredited rail transport operators are subject to the requirements of the RSNL and National Regulations, as administered by the ONRSR.

RSNL means the *Rail Safety National Law* which has been enacted as a Schedule to the *Rail Safety National Law (South Australia) Act 2012 (SA).*

National Regulations means the *Rail Safety National Law National Regulations 2012* approved by SCOTI and made under the RSNL.

The RSNL imposes 'safety duties' on rail transport operators and other persons (RSNL s50), as well as creating the ONRSR to administer the RSNL and recognising that it shares responsibility for rail safety with these duty holders, to support a co-regulatory approach.

Key features of the RSNL include:

- general duties that apply to responsible parties along with the statutory recognition of shared responsibility for rail safety
- risk management criteria based on the requirement to ensure so far as is reasonably practicable, that rail operations are safe
- detailed requirements for the development and contents of safety management systems
- clear criteria for the accreditation of rail infrastructure managers and rolling stock operators, and the registration of managers of private sidings
- requirements for consultation and communication, particularly when planning a change to railways operations
- a hierarchy of sanctions and penalties where breaches of rail safety requirements occur
- requirements for the contents and accessibility of the National Rail Safety Register (to be maintained by the NRSR)

It is a legislative requirement of accreditation that rail transport operators have appropriate safety management systems in place. Rail transport operators are legally obliged to implement and then comply with their safety management system (RSNL s101).

The policies and guidelines associated with accreditation are available on the ONRSR website.

## 1.5 Integration with other management systems

While the rail safety management system is only mandatory in relation to railway operations for which accreditation is held, rail transport operators may find it expedient to develop one safety management system for the whole of their organisation and not limit it only to railway operations. Rail safety legislation adds to the protection provided by occupational health and safety (OHS) legislation in particular.

Where a rail transport operator chooses to develop one safety management system to cover the requirements of various legislation, specific risk controls mandated by rail safety legislation, such as rail safety worker health and fitness management, need only be implemented in relation to rail safety workers.

Some mandated control measures under rail legislation, such as rail safety worker competence management, may be adaptable to the operations more broadly and be equally useful in promoting the safety of the activities of the rail transport operator more generally, as well as the business objectives of the rail transport operator.

The process for developing a rail safety management system that is integrated with OHS, environmental, or indeed other management systems, is not substantially different from developing a system from first principles. When developing the required component of the rail safety management system, it is simply a matter of identifying what elements of the system are already in place that meet, or with amendment could meet, the requirements under the rail safety legislation and making any necessary adjustments.

**For example:**
All employers in Australia are subject to safety duties imposed by OHS legislation. The RSNL adds to the protection provided by OHS legislation and both sets of legislation apply to rail transport operators.

There are many areas of similarity between rail and OHS requirements. Both OHS and rail safety legislation require:

- compliance with non- delegable general safety duties;
- risk/hazard identification, assessment, control and review;
- consultation on safety matters;
- the provision of training, information, instruction to, and supervision of workers; and
- compliance with particular risk control measures for certain known areas of risk.

OHS and rail safety management systems should essentially be working to the same goal and cover largely the same ground. They should therefore be well suited to integration.

It is however important to note that if a provision of OHS legislation applies to railway operations, that provision continues to apply, and must be observed, in addition to the RSNL. OHS legislation takes precedence over the RSNL if it is found that there is an inconsistency between the requirements of each (RSNL s48 (2)).

Compliance with the RSNL, for example by compliance with safety management system requirements, is not of itself a defence for proceedings for an offence against OHS legislation (RSNL s48 (3)). Rail transport operators are encouraged to seek independent legal advice if required on this matter.

# 2 Guidance on the regulatory requirements

This section of the guideline provides a plain English explanation of requirements in the RSNL relevant to the safety management system and what the NRSR looks for when assessing the safety management system.

RSNL s99
Regulation 16

Regulations
Schedule 1

## 2.1 Structure of the safety management system

The safety management system must be in a form that is consistent with the legislation and approved by the NRSR. It must:

RSNL s99 (5)

- be evidenced in writing;
- provide a comprehensive and integrated management system for all aspects of control measures adopted in accordance with the legislation;
- be set out and expressed in a way that its contents are readily accessible and comprehensible to persons who use it;
- be prepared in accordance with the regulations;
- contain the matters and information required by the regulations;
- be kept and maintained in accordance with the regulations; and
- state the persons responsible for the development of all, or all parts of, the safety management system.

To guide the implementation of the safety management system locally, rail transport operators may use the description of the safety management system that they were required to submit with their application for accreditation. This description can be used to:

- provide contextual information on the organisation to which the safety management system applies, including organisational charts;
- specify the scope and nature of the railway operations to which the safety management system applies; and
- state the persons responsible for the implementation of the safety management system and the relationship between these persons.

The description should explain the framework for implementation of the safety management system and keeping the safety management system up to date.

The description may also:

- include the rail transport operator's risk register (noting that the RSNL provides that the safety management system must include a risk register that identifies and assesses risks in relation to the railway

operations and specifies controls for these risks);
- list the elements of the safety management system and, where appropriate, explain the relationship between the elements of the safety management system;
- provide a list of key standards and procedures and an indication of the safety management system elements to which they relate; and
- include documents explaining how standards or codes are to be applied in the context of the rail transport operator's railway operations, or information on where such documentation may be found.

## 2.2 Contents of the safety management system

The safety management system must address the matters listed below and provide a level of detail that is appropriate for the scope, nature and safety risks of the railway operations, and sufficient to meet the general safety duty.

Regulation 16

Rail transport operators must undertake consultation in accordance with the legislation before establishing a safety management system. The matters (elements) that must be addressed in the safety management system are:

RSNL s99 (3)

- safety policy;
- safety culture;
- governance and internal control arrangements;
- management responsibilities, accountabilities and authorities;
- regulatory compliance;
- document control arrangements and information management;
- review of the safety management system;
- safety performance measures;
- safety audit arrangements;
- corrective action;
- management of change;
- consultation;
- internal communication;
- training and instruction;
- risk management;
- human factors;
- procurement and contract management;
- general engineering and operational systems safety requirements;
- process control;
- asset management;
- safety interface coordination;
- management of notifiable occurrences;
- rail safety worker competence;
- security management;
- emergency management;
- health and fitness;
- drugs and alcohol;
- fatigue risk management;
- resource availability.

Regulations Schedule 1

The specific requirements for each of the elements of the safety management system are discussed in the following sections.

## 2.3 Safety policy

The safety management system must include a safety policy that is endorsed by the CEO and Board (or any other person or body controlling the rail transport operator).

Regulations Schedule 1 Clause 2 & 3

The policy must include a commitment to the development and maintenance of a positive safety culture and the continuous improvement of all aspects of the safety management system.

The safety management system must include processes for the communication of the safety policy and safety objectives to all people who are to participate in the implementation of the safety management system.

Regulations Schedule 1 Clause 14(b)

A rail transport operator is likely to have a range of organisational policies and must ensure that the policies of the organisation, when taken as a whole, promote a consistent set of objectives.

Regulations Schedule 1

For example, policies that set out standards of conduct, or disciplinary processes should be consistent with the principles that support a positive safety culture.

The remaining elements of the safety management system are the means by which the safety policy is given effect.

## 2.4 Safety culture

Safety culture is something that emerges from and is a product of all aspects of the way things are in an organisation. In everyday language, culture is, “the way we do things around here”. A positive safety culture is characterised by awareness, assessment and action on safety matters as a part of everyday business, at every level of an organisation and supported by an open communications style throughout the whole organisation.

A positive safety culture is fundamental to an effective safety management system and the safety management system must specify the methods that will be used so far as is reasonably practicable to promote and maintain a positive safety culture.

Regulations Schedule 1 Clause 3

An organisation with a positive safety culture is characterised by:
− communication founded on mutual trust;
− shared perceptions of the importance of safety; and
− confidence in the efficacy of preventive measures.

Key elements of a positive safety culture which organisations should consider when determining the methods to meet the requirements of the RSNL and to promote and maintain such a culture are:

- **committed leadership**: the organisation’s leaders, from its senior executives to line managers, actively encourage and participate in safety initiatives and activities. This may be through events and communications, staff mentoring, provision of resources, or providing

safety incentives and awards.

- **keeping people informed**: the organisation's members, both managers and workers, know what is going on in their organisation. This includes collecting, analysing and disseminating relevant information derived from the workforce, safety occurrences, near misses, and regular proactive checks of the organisation's safety activities.
- **maintaining vigilance**: the organisation's members are constantly on the look out for the unexpected. They focus on problems and issues as they emerge well before they can escalate to more serious occurrences. Members are prepared to look upon these potential risks as a sign the system might not be as healthy as it should or could be.
- **promoting a just culture environment**: the organisation promotes a 'just culture' which acknowledges human error and the need to manage it by supporting systems and practices that promote learning from past errors or mistakes. It encourages uncensored reporting of near miss occurrences and worker participation in safety issues. A 'just culture' is transparent and establishes clear accountability for actions. It is neither 'blame free' (awarding total immunity for actions) nor 'punitive' (enacting a disciplinary response regardless of whether acts were intentional or deliberate).
- **promoting organisational flexibility**: the organisation is capable of adapting effectively to meet changing demands. This relies on being prepared for and practiced in handling changing circumstances with people competent to lead and carry out tasks. Flexibility allows local teams to operate effectively and autonomously when required, without the need to adhere to un-necessarily inflexible rules.
- **encouraging willingness to learn**: the organisation is willing and eager to learn from its workers, its own experiences and from corporate safety databases. The key here is that organisations and their members use the information to improve safety and act on the lessons derived. In developing and maintaining a positive safety culture, account should be taken of:
  - the importance of leadership and commitment of senior management;
  - the executive safety role of line management;
  - the need to involve rail safety workers at all levels;
  - the need for openness of communication;
  - the need for human factors to be positively addressed;
  - awareness and recognition of opportunities for safety improvement; and
  - willingness to apply appropriate resources to safety.

## 2.5 Governance and internal control arrangements

The CEO and Board (or equivalent governing body) are responsible for the conduct and performance of the rail transport operator. This is reflected in the duty of the officers to exercise due diligence to ensure that the rail transport operator complies with its duties and obligations under the RSNL. They have an important role in providing leadership, giving direction to, and monitoring the performance of, the rail transport operator and managers who are given day to day responsibility for railway operations.

To meet their responsibilities, leaders need to understand the risks associated with the rail transport operator's railway operations, the rail transport operator's obligations under the RSNL, and the level of compliance being achieved with those obligations.

Appropriate governance and internal control arrangements will ensure that information required to manage rail operations safely and monitor compliance with the RSNL is available to the right level and people within an organisation so that decision-making is effective.

The safety management system must include systems and procedures to ensure that the CEO and Board, or the people managing the railway operations:

Regulations Schedule 1 Clause 4(1)

- have sufficient knowledge of the risk profile of the railway operations being carried out, to enable probative management of the risks of those railway operations;
- have sufficient knowledge of the level of compliance being achieved with the rail transport operator's duties and obligations under the legislation; and
- have sufficient knowledge to determine whether: the safety management system is working effectively; and the risks to safety are being identified, assessed and eliminated or controlled; and controls used to monitor safety to manage risks to safety are being regularly reviewed and revised.

Examples of systems and procedures which may be included in a rail transport operator's safety management system to ensure that senior management receives appropriate and relevant information include:

- **key safety performance measures** (which may include targets where appropriate) together with regular reporting systems so that performance is known and being monitored (see also section 2.10 Safety Performance Measures).
- **escalation procedures** within hazard identification processes so that unaddressed hazard reports are progressively escalated through the management hierarchy until the hazard is effectively addressed. The timing and level of escalation should be related to the level of risk associated with the hazard.
- **processes for reporting on high risk hazards** identified and measures undertaken to manage those risks.
- **processes for reporting on the way in which assets are being managed**. This should extend to awareness of future renewal and upgrading programs, and how asset condition and reliability will be achieved and sustained through engineering, technical and financial management, enabling safety and performance targets to be met.
- **processes to verify that the competence of safety-critical employees continues to be managed** and that the organisation retains its overall competence and capacity to conduct railway operations safely.
- **processes to verify that the resources available for implementing, managing and maintaining the safety management system are sufficient**.

Discretion should be used in determining the level of detail necessary in information provided to the CEO and Board (or equivalent). This will vary according to the size and governance arrangements of the organisation.

The safety management system must support the leadership role of the CEO, Board and managers by including systems and procedures to ensure that

Regulations

decisions and directions made by the CEO, Board and managers, that affect safety are being implemented effectively. For example, a safety management system may include some of the following procedures to ensure effective implementation of safety decisions:

Schedule 1 Clause 4(2)

- safety decisions are documented, with any necessary follow up action and person responsible for implementation noted;
- safety decisions are provided to the person responsible for implementing the decision, along with advice as to any requirements for reporting on the matter;
- safety decisions are included on an issues log (or equivalent), that is regularly reviewed;
- safety decisions are followed up until completion or the implementation is self-sustaining.

## 2.6 Management, responsibilities, accountabilities and authorities

It is essential in any management system that each person responsible for implementation of the system has a clear understanding of their accountabilities, responsibilities and authorities in relation to the system (including limits of authority). This should cover the scope of operations at any given time, ie business as usual, degraded and emergency situations.

Each person needs to understand where they fit in the system, and what other functions are reliant on the role that they undertake. All staff and contractors have a responsibility to report safety risks and incidents and rail transport operators must ensure that there are clear processes and delegations to capture this information and respond accordingly.

To achieve this, the safety management system must include documents that describe the responsibilities, accountabilities, authorities and interrelation of the personnel who manage or carry out rail safety work, or who verify such work. These requirements may be satisfied by organisational charts supported by position descriptions which describe the key dependencies between roles.

Regulations Schedule 1 Clause 5(2)

Safety responsibilities, accountabilities, authorities and interrelationships should be determined in accordance with established policies of the rail transport operator. For example, some authorities should only be allocated to a person with appropriate technical qualifications; or a certain level of management seniority. The safety management system must include policies that indicate how safety responsibilities, accountabilities, authorities and interrelationships have been determined.

Regulations Schedule 1 Clause 5(1)

Similarly the safety management system must support the role of safety personnel by specifying procedures for safety personnel to report safety risks, for example through safety management committees. Documents that describe the authorities given to safety personnel to enable them to meet their responsibilities must also be included in the safety management system.

Regulations Schedule 1 Clause 5(3)(4)

These requirements may be satisfied by a delegations manual (or equivalent) which lists authorities and the requirements for holding the authority, along with any other key requirements in relation to exercising the authority. The delegations manual may make reference to other supporting documents if

necessary.

When assigning responsibilities, accountabilities and authorities, particular account should be taken of the need for:

- the nomination of a manager who, irrespective of other responsibilities, is responsible for maintaining, reviewing and reporting on the organisation's safety management system;
- individuals to have the necessary authority to execute their responsibilities;
- individuals to be held accountable for the execution of their responsibilities;
- clear lines of accountability for personnel certifying the safety of critical infrastructure, equipment and operations;
- personnel who manage or carry out work relating to the safety of the railway operations, or who verify such work, to be given the necessary organisational freedom and technical authority to;
  - initiate action to prevent unsafe occurrences;
  - initiate, recommend or provide solutions to railway safety issues through designated channels;
  - initiate action to learn from railway safety occurrences and to prevent any recurrence;
  - verify the implementation of solutions;
  - control further design, construction, commissioning, operation or maintenance activities so that any observable deficiency or unsatisfactory railway safety condition is corrected; and
  - identify internal verification requirements, provide adequate resources and assign competent personnel for verification activities.

## 2.7 Regulatory compliance

The safety management system must include systems and procedures for the identification of, and compliance with, safety requirements under the RSNL and other safety legislation.

Regulations Schedule 1 Clause 6

A preliminary step in conducting a risk assessment is to identify the internal and external context in which the activities being assessed are conducted. Safety requirements under the RSNL and other safety legislation should be identified as part of identifying the external context.

Therefore, safety management system requirements in relation to regulatory compliance requirements may be satisfied in part, by clear requirements for identification and documentation of regulatory safety requirements included in the risk management systems and procedures.

Legislation changes from time to time and the rail transport operator should have overarching systems to monitor legislation and to ensure that compliance with legislated safety requirements or statutory notices, such as improvement or prohibition notices, is being achieved.

## 2.8 Document control arrangements and information management

The safety management system must have systems and procedures to control and manage all documents and information relevant to the management of risks to safety associated with railway operations. Such

Regulations Schedule 1 Clause 7

systems and procedures must include systems and procedures for:

- the identification, creation, maintenance, management, storage and retention of records and documents;
- ensuring the currency of documents required for railway operations; and
- the communication of any changes to the document control systems and procedures, to rail safety workers and employees of the rail transport operator who rely on those systems and procedures to carry out their work.

The information below outlines principles for effective document control.

### *2.8.1 Document and data approval and issue*

Safety related documents and data should be reviewed and approved for adequacy prior to issue and use. A master list or equivalent document control procedure identifying current revision status of documents should be established and be readily available to preclude the use of invalid or obsolete documents.

These systems and arrangements should ensure that:

- the pertinent issues of appropriate documents are available at all locations where operations essential to the effective functioning of the safety management system are performed.
- invalid or obsolete documents are promptly removed from all points of issue or use, or otherwise assured against unintended use.
- any obsolete documents retained for legal or knowledge preservation purposes are suitably identified.

### *2.8.2 Accuracy and clarity of language*

Workers authorised to approve safety related documents for issue, should ensure that the contents are accurate and can be understood by all recipients to whom they apply. All documents should be in English, the contents may be repeated in other languages if needed. The use of controlled language (ie using short, clear sentences, and avoiding jargon) is recommended to encourage shared understanding and good data quality.

### *2.8.3 Document and data changes*

Changes to documents and data should be reviewed and approved by the same functions/organisations that performed the original review and approval, unless specifically designated otherwise. The designated functions/organisations should have access to pertinent background information upon which to base their review and approval. Where practicable, the nature of the change should be identified in the document or appropriate attachments.

### *2.8.4 Storage and retention of documents and records*

Documents and records should be stored and maintained in such a way that they are readily retrievable, and in facilities which provide a suitable environment to minimise deterioration or damage and to prevent loss. Retention periods for records and documents should be established, documented and complied with.

### *2.8.5 Exchange of information*

The legislation requires the management of documents and information relevant to the risks to safety of the railway operations for which the rail transport operator is accredited. The safety management system should provide for the exchange of safety information with third parties who conduct railway operations. The types of information that should be shared include, for example:

- findings of investigations into safety occurrences;
- defects identified in relation to particular railway parts, systems or common maintenance processes.

Implementation of such information sharing arrangements does not require rail transport operators to have an intimate knowledge of the railway operations of other persons. The information to be shared should be that which could reasonably be expected to be of relevance to others who undertake railway operations. It is the responsibility of the third party to assess the information that is shared for its relevance to their specific railway operations.

## 2.9 Review of the safety management system

The safety management system must include systems and procedures for the review of the safety management system at specified periods. The time period for mandatory review is specified in the rail transport operators notice of accreditation. The time period noted in the notice of accreditation may have been prescribed by the legislation, or agreed between the rail transport operator and the NRSR.

Regulations Schedule 1 Clause 8

RSNL s102

Rail transport operators must undertake consultation before reviewing the safety management system (also see 2.14 Consultation). In conducting this consultation, the rail transport operator must ensure that those consulted are asked for their opinion on whether, and how, the safety management system can be improved.

RSNL s99 (3)

Regulation 17

In conducting the safety management system review the rail transport operator must ensure:

Regulation 17(3)

- that the effectiveness of the safety management system is assessed (including an examination of records in relation to notifiable occurrences and breaches of the system);
- that the effectiveness of any revisions that were made as a result of the last review are assessed;
- that any recommendations or issues arising out of any audits or safety investigations that have occurred since the last review are taken into account; and that any issues arising from any prohibition or improvement notices that have been issued since the last review are taken into account;
- that any deficiencies in the system are identified;
- that methods of remedying any deficiencies are designed and assessed;
- that any opinions provided by people consulted, as to whether and how the safety management system should be improved, are assessed;
- that any other suggestions for improving the system that arise during the course of the review are assessed; and

- if any deficiencies or practicable improvements are identified, that a plan is created to remedy those deficiencies, or to effect those improvements (as the case may be).

It is good practice to nominate a person/s responsible for conducting the review and updating the risk register as appropriate.

See also 2.12 Corrective Action.

All of the above aspects of the safety management system review must be documented, and subsequently summarised and reported in the safety performance report provided to the NRSR.

Regulation 17(4)

The safety performance report must contain:

- a description and assessment of the safety performance of the operator's railway operations;
- comment on any deficiencies, and any irregularities, in the railway operations that may be relevant to the safety of the railway;
- a description of any safety initiatives in relation to the railway operations undertaken during the reporting period or proposed to be undertaken in the next reporting period; and
- any other information or performance indications prescribed in the regulations

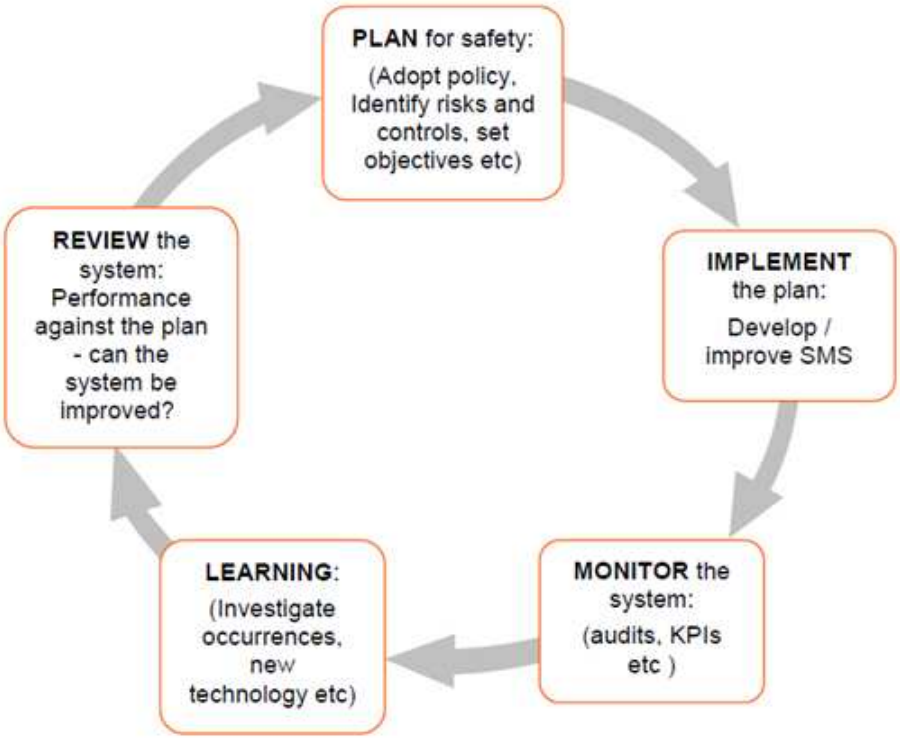
RSNL s103(1)(c)

The safety performance report must be in a form approved by the NRSR and submitted within 6 months after the end of each reporting period.

RSNL s103(1)

While the rail transport operator is required to review its safety management system and report to the NRSR as listed above they also needs to be responsive to issues as they arise and review the relevant parts of the safety management system so that it may be continuously be improved.

**Figure 1** demonstrates the cycle of continuing improvement which should result from regular reviews of the safety management system.




## 2.10 Safety performance measures

The safety management system must include systems and procedures to ensure that the safety management system is effective by using key performance indicators.

Regulations
Schedule 1
Clause 9

Key performance indicators measure safety performance of both the system and, where appropriate individuals, and allow the effectiveness of the safety management system to be determined.

In determining performance measures, rail transport operators should consider and select a range of positive performance indicators along with outcome indicators (or lead and lag indicators). Positive performance indicators measure activities undertaken to improve safety performance, for example, the number of safety audits conducted, or competence checks undertaken, or the number of drug and alcohol tests conducted. The performance measures will be tailored to the specific circumstances of the rail transport operator and should be linked to the risk management process.

Outcome indicators measure the safety outcomes, for example the number of non-compliances revealed by a safety audit, or the number of positive results of drug tests, or injuries sustained, or signals passed at danger. An example of a lag indicator is Lost Time Injury Frequency Rate (LTFIR), which is a measure of the consequence of a risk happening.

Performance indicators selected should include indicators to measure the performance of key risk controls and safety management system elements.

Key performance indicators should be assessed against established performance objectives. Remedial action may be required where the system does not achieve an appropriate performance level.

The safety management system must also include systems and procedures to ensure the collection, analysis, assessment and dissemination of safety information held by the rail transport operator.

Regulations Schedule 1 Clause 9(2)

It is important that the safety performance of the rail transport operator is disseminated widely within the organisation so that those with responsibility for safety receive feedback on the results of their efforts. Such safety information should be provided not only to managers, but to rail safety workers whose safety awareness and consequent actions affect safety outcomes. The information provided should be in a form that is readily understood by the intended audience.

## 2.11 Safety audit arrangements

The safety management system must include an audit program that provides for the scheduling and frequency of audits, including of the safety management system. The audit program must give priority to those matters that represent the greatest safety risk.

Regulations Schedule 1 Clause 10

The audit program should include relevant activities of third parties working on behalf of the rail transport operator.

The safety management system must also include documented procedures to ensure:

- that auditors have the skills and knowledge required to undertake audits and are independent from the area being audited, to the maximum extent possible.

Regulations Schedule 1 Clause 10 (2)(3)

- that there is a process for the collection of information that allows a determination to be made as to whether the railway operations comply with the safety management system and to determine the effectiveness of the safety management system.

Regulations Schedule 1 Clause 10(4)

The safety management system must include procedures for:

- communicating the results of audits to those people who are responsible for the oversight of the railway operations in the area audited so that they may review the audit findings and take corrective action where appropriate;
- registration and implementation of recommendations for corrective action/s identified by the audit; (see also section 2.13 Corrective Actions)
- review of the effectiveness of the audit program.

The various levels of management have different roles and responsibilities for providing oversight and taking action in relation to audit finds and recommendations for corrective action. The procedures for communicating the results of audits should reflect the need to provide appropriate information to enable those with responsibility for oversight of the railway operations to meet their responsibilities within the safety management system and under safety legislation. For example the highest levels of management, (such as the CEO or Board or management committee) should be provided with information on the internal safety audit arrangements, and reports on the conduct and outcomes of audits or the audit program, and the review of

effectiveness of the audit program. See also section 2.5 Governance and Internal Control Arrangements.

## 2.12 Corrective action

Regulations Schedule 1 Clause 11

The safety management system must include procedures to ensure that, so far as is reasonably practicable, corrective action is taken in response to any safety deficiencies identified following inspections, testing, audits, investigations or notifiable occurrences.

In particular procedures must be included for:

- registration of any corrective actions taken;
- the review of those corrective actions;
- the implementation of corrective actions if it is determined that corrective actions are required;
- the assigning of responsibilities for corrective action; and
- giving priority, when undertaking corrective action, to those matters representing the greatest safety risk.

Procedures for the implementation of corrective action should provide a link to processes for the management of change where appropriate. See also section 2.13 Management of Change.

A system of internal control should apply to the management of corrective actions. While individual corrective action may be taken at a local level for some issues, there should be an overarching process where higher levels of management monitor the implementation of corrective action.

Reports on incomplete corrective actions should be provided to progressively higher levels of management as actions remain incomplete. The length of time that may elapse before the escalation occurs should be dependent on the level of risk associated with that particular action. For example a corrective action that is assessed as safety critical may have reporting to higher levels of management earlier, and perhaps in more detail, than one that is of lesser safety significance.

## 2.13 Management of change

Regulations Schedule 1 Clause 12

The safety management system must include procedures for ensuring changes that may affect the safety of railway operations are identified and managed.

The purpose of the management of change process is, first and foremost, to ensure that change is introduced safely, so far as is reasonably practicable.

An effective management of change process will also aid in consistent decision making and provide assurance that the rail transport operator continues to comply with the RSNL and within the conditions and restrictions of their accreditation.

Different types of change introduce varying degrees of potential risk. The degree of scrutiny required, and the resulting level of detail at each step, should be proportionate to the degree of risk potentially introduced by the change, or the process of implementing the change. It is therefore recommended that rail transport operators have in place a range of management of change processes which require an increasing level of

scrutiny as the potential level of risk associated with the change increases.

Large scale changes, for example major infrastructure projects or organisational restructures, should be managed as a project with safety documentation, such as safety validation documentation, forming part of the change management plan. A change management plan should be treated as a live document over the course of project planning, and updated as information changes or becomes available; for example it may initially set out assumptions replacing these with more factual information as it becomes available. Similarly, the change management plan may initially set out the risk assessment methodology and findings, later incorporating the safety requirements.

Safety validation is not a requirement in the legislation but is a methodology that can be used as part of the risk assessment and control process. It is defined in AS 4292 as *'a systematic and structured process to ensure that all risks associated with a change are identified and are reduced to as low as reasonably practicable before the change is implemented'*. The legislation requires that a detailed record of all aspects of the risk assessment process is kept and this may include safety validation documentation. RSNL s100(2)

### *2.13.1 A systems view of change*

An organisation can be seen as a system of processes and people that work together to achieve the purposes of the organisation.

Change within systems frequently has flow on effects to other parts of the system and can have unintended consequences if the effects are not fully identified. The management of change process is expressly intended to ensure that the effects and influences of change are identified and managed.

Change in an organisation can be seen from two perspectives; changes to management and changes to the organisational assets. The way that business is conducted (ie staffing and organisational structure) and the physical assets supporting that business (ie equipment and facilities) may be the drivers for change or impacted by change and can be broken down into the following elements:

- people, such as employees (managers and staff), consultants, rail contractors, customers, suppliers and other stakeholders;
- environment, such as the physical and social environments of the organisation and this may cover not only the internal environment but also the surrounding industry (eg, interfaces with other rail organisations) and regulatory environment in which the organisation exists;
- work practices, policies and procedures; and
- equipment, technology and facilities.

A change may be influenced by, or affect one or more of, the above elements and/or the interfaces between these elements, to have the overall affect of changing the organisation's risk profile. As such, it is useful to take a systems (or *holistic*) view to the management of change process to ensure that the impact on all elements and their interfaces across their lifecycle can be systematically identified, assessed and controlled.

A key aspect of the management of change process is the definition of which elements of the system and the lifecycle need to be considered. A starting point for the process of defining the system and its relevant elements is the organisation's safety management system.

### *2.13.2 Change management procedures in a safety management system*

Accredited operators should have a range of management of change processes that require an increasing level of scrutiny as the potential level of risk associated with the change increases. The safety management system must include procedures for ensuring that changes that may affect the safety of railway operations are identified and managed, including but not limited to procedures for ensuring, so far as is reasonably practicable that:

Regulations Schedule 1 Clause 12

- the change is fully identified, described and documented in the context of the specific rail organisation;

Regulations Schedule 1 Clause 12

- the changes are documented in a specific change register, the risk register or other appropriate means in the safety management system;
- affected parties are identified and, where practicable, consulted;
- the roles and responsibilities of rail safety workers and employees of the rail transport operator are clearly specified with respect to the change;
- the risks to safety that may arise from the change are identified and assessed;
- the controls that are to be used to manage risks to safety and monitor safety are specified;
- the information in the risk register is updated with any changes to risks and control measures;
- that the proposed change conforms to legislation;
- where appropriate, the change should also be consistent with accepted codes or standards;

RSNL s117

- the rail safety workers and employees of the rail transport operator are fully informed and trained to understand and deal with the proposed change;

Regulations Schedule 1 Clause 12

- this may involve a review of the competence requirements for the tasks to be undertaken;

Regulations Schedule 1 Clause 12

- review and assessment of the change, once implemented is undertaken to determine whether the change has been appropriately managed;
- monitoring and review of the effect of the change should be undertaken, documented and necessary corrective actions implemented, to ensure that control measures perform as intended;
- decisions are transparent and formally accepted by those responsible for decision-making within the rail transport operator.

### *2.13.3 Regulatory compliance when undertaking change*

It is a condition of accreditation that certain decisions, proposed events or changes must be notified to the NRSR in writing within the time prescribed in the legislation.

Regulation 9

In some cases, a planned change may take the rail transport operator's railway operations outside what is allowed under their existing accreditation and consequently may require variation of accreditation before being implemented.

Further guidance on processes and requirements for the notification of change and variation of accreditation are provided in the *ONRSR Policy: Regulatory Response to the Management of Change.*

### *2.13.4 Types of change to be managed*

Rail transport operators can be subject to changes from both internal and external sources.

Internal sources of change may include: turnover in staff; the findings or recommendations of internal audits; directions from the Board or Management Committee; findings from internal investigations, organisational restructuring, or changes in the organisation's physical assets (such as new equipment).

Technological change in particular may occur as:

- changes to the functional specification of an asset, eg. more or less performance from a particular asset is needed in the future (as business demands may be about to change)
- changes to the physical characteristics of an asset, eg. another asset with the same functional performance is needed in the future (for reliability, safety and/or cost reasons)
- changes to the derived data associated with an asset, eg. a differing maintenance task, spares needs, technical manual for a particular asset is needed in the near future (as the current maintenance seems ineffective and/or appears costly).

In some situations change will involve an entirely new asset and operation. Such situations of a fresh design offer the ability to make step changes in safety and performance as many existing constraints are absent.

External sources for change may include: legislative or regulatory changes; safety investigation authorities; road authorities; other rail transport operators; suppliers; or rail contractors. These changes may present themselves as:

- planned change, for example change brought about by business or strategic plans;
- unavoidable, unplanned or unintended change, including 'creeping' or 'incremental' change, where the impact at any time may seem minor, but which over a period can increase risk;
- a change to an interface;
- legislative change or a direction from the NRSR;
- temporary change (such as the installation process for new equipment);
- emergency or abnormal change which may be required within a short timeframe and therefore may require different controls.

The rail transport operator's management of change procedures should enable the different types of change to be identified in advance and managed

appropriately.

### *2.13.5 Technological change for designers and suppliers*

Under the RSNL, designers and manufacturers of things that are to be used as or in connection with rail infrastructure or rolling stock have a safety duty. Certain attention should be paid to the commissioning and ongoing maintenance of rolling stock to ensure that decisions at the design stage of development consider safety at each subsequent stage of the product life cycle to minimise future risks. The risk management process in managing technological change should encompass all aspects of design including structures, components, systems hardware, systems software, controls, layout, and configuration. Rail transport operators and designers should consider the principles of *engineering safety management* in commissioning or designing rail equipment or infrastructure.

RSNL s53

### *2.13.6 Consultation during change*

Consultation with persons affected is an integral part of managing change and should be included, where reasonably practicable, at regular intervals throughout the management of change process. Proper consultation with key stakeholders about proposed changes will ensure that a risk is not transferred to those stakeholders without their knowledge.

Regulations Schedule 1 Clause 12(b)

The level of consultation will be guided by the scale of change; major change will likely require a wide and comprehensive consultation, whereas minor changes may only need consultation with those directly managing the task.

The guiding principle is that it is better to consult with people no matter how little they may be affected by the change, as part of an open and transparent management of change process and good risk management. There are specific requirements for who a rail transport operator must consult with when establishing or reviewing a safety management system (section 2.14 Consultation).

RSNL s99(3)

The objectives of consultation are to:

- exchange all information necessary for identification and assessment of the options for change, and the possible impact of each option;
- ensure that all relevant railway personnel, interfacing external organisations and other affected persons are aware of the proposed change, have an opportunity and are encouraged to comment on safety aspects and act consistently to achieve a safe outcome;
- ensure different perspectives are reflected in the monitoring and review of the proposed change; and
- promote ownership among affected persons for safety and the successful implementation of the change.

Consideration of the objectives of consultation assists the rail transport operator to identify those who should be consulted in any case. Affected persons may include:

- persons who will be involved in implementing the change (technical staff and/or end user employees/rail safety workers) and/or whose work may be affected by the proposed change;
- organisations with an interface with the proposed change, maintenance

and construction contractors, and other third parties whose access may be affected by changes to the scope of operations;
- manufacturers/suppliers;
- contractors;
- rail or other unions representing affected persons;
- health and safety representatives under OHS laws;
- the public/local community and passenger representative bodies.

It may also be beneficial to consult with persons who may make a useful contribution to the change process (for example people with prior experience in similar changes, or who have technical expertise).

Emphasis should be placed on direct dialogue with the appropriate persons, with efforts focussed on an exchange of views and information rather than a one way flow of information. By engaging relevant parties and actively seeking input, the change process will not only benefit from improved ownership but – by tapping into the knowledge and strengths of employees - may also be better informed and targeted to the real needs of the organisation, contributing to better outcomes overall.

As a result of consultation, the definition of the change, risk assessment, options and implementation plans may need to be amended.

Rail transport operators should produce a consultation plan for changes involving multiple stakeholders, or where a stakeholder will be significantly affected by a change.

### *2.13.7 Consultation plans*

It may be useful to develop a consultation plan depending on the size of the project and the range of people to be consulted. When they are used, consultation plans should be implemented with sufficient lead-time to enable feedback and revision prior to implementation. Input from other affected rail transport operators and parties may be required to complete the plan.

Initial consultation involves providing information on the proposed change. This information should be circulated widely even if some stakeholders respond that the change has no impact on them.

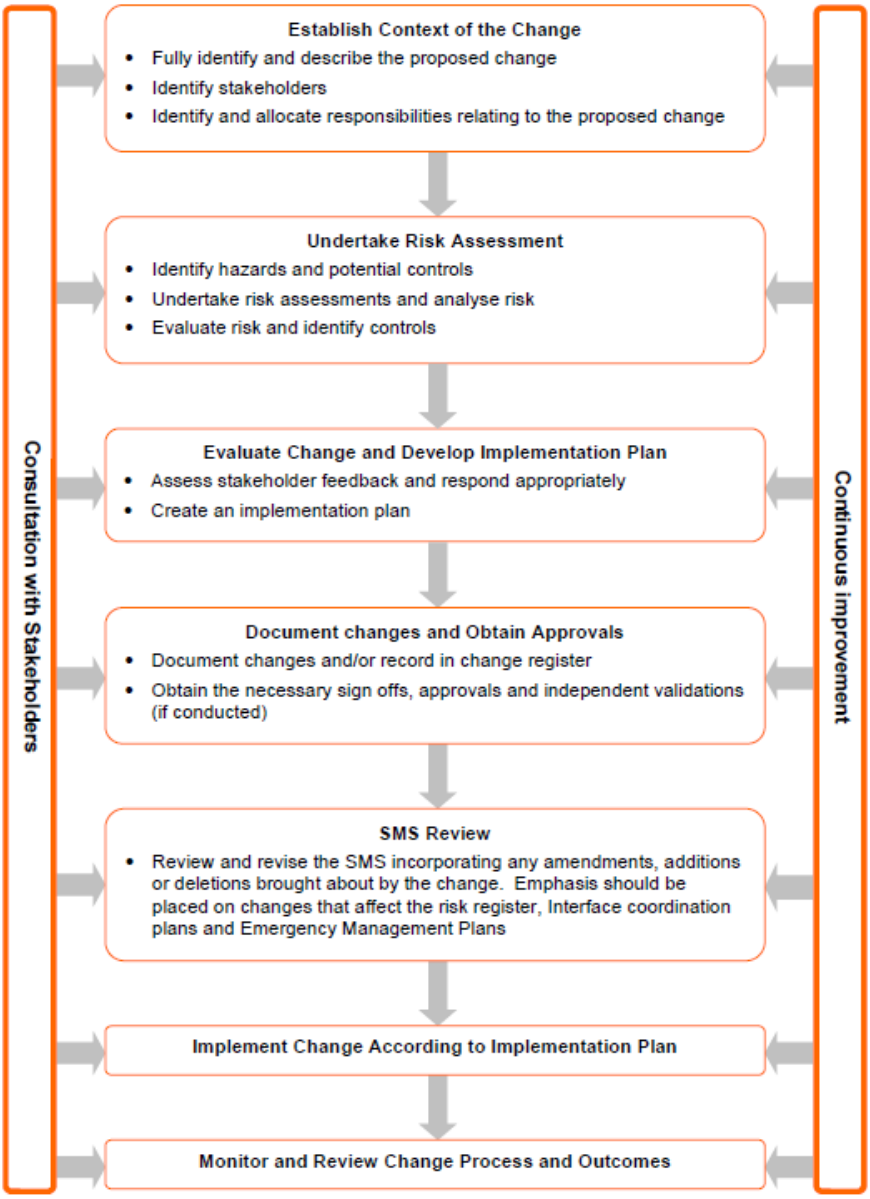
Elements of a consultation plan include but are not limited to the following:

- name of the rail transport operator;
- title of the proposed change;
- brief description of the proposed change;
- Gantt chart or similar containing all elements of the plan including milestones, timelines, and dates for achieving outcomes;
- names of all affected rail transport operators and other affected parties, including a brief description of the proposed consultation with each and their respective accountabilities;
- details of the communications packages to be prepared for all affected parties;
- details of all briefings, education/training of all affected personnel including a strategy that covers personnel not available during the implementation;
- means by which consultation responses, including risk and safety issues,

will be received, addressed and fed into the project plan;
- resources required for consultation activities; and
- reporting requirements in relation to the consultation undertaken.

### *2.13.8 Steps in the management of change process*

An appropriate and robust management of change and safety validation process involves seven main steps, which are set out in **Figure 2 (below).**




The amount of scrutiny and detail at each step should reflect the scale and risks involved with the change. For example a riskier project would require more careful planning and risk analysis than a routine change.

There are two aspects of risk in relation to a change. Risks associated with the change itself, and the risk associated with the process of introducing the change (for example the risks of building a new bridge). Each will have an influence on the practicability of potential solutions to the problem at hand. It

is a fundamental objective of the change management process that both aspects of risk are managed.

STEP 1 Establish the context of the change and consult with stakeholders

This step involves identifying the change and developing the necessary plans for change management in consultation with stakeholders, including interfacing organisations.

A clear description of the current situation, including the problem or matter that the change seeks to address, and the change itself, is required. This should be sufficiently detailed to fully define the overall nature and scope of the change. Changes can be defined and analysed at several levels, including project level, component level and/or process level. More than one may be applicable.

Where the rail transport operator has a range of management of change processes in place that require varying levels of scrutiny, the appropriate process is selected.

Each management of change process should:

- describe safety documentation requirements (such as safety validation documentation), including whether a change management plan is required;
- specify whether independent safety validation assessment is required and how that is to be achieved;
- identify the authority responsible for granting or refusing approval for implementation of the change (may include road authorities or other authorities outside of the ONRSR); and
- provide criteria and guidance on the extent and nature of the consultation and briefing that should be carried out for the level of safety validation being applied.

Changes that involve new or modified assets, plant, equipment or information technology for which a project life cycle applies should be subject to processes that consider the life cycle of the project, including:

- concept and feasibility;
- definition of requirements;
- design;
- implementation;
- installation and commissioning;
- operations and maintenance;
- decommissioning and disposal.

STEP 2 Undertake a risk assessment

This step is the actual undertaking of a risk assessment on the proposed change and deciding how the risk, including the controls, can be managed so far as is reasonably practicable. Appropriate use of risk management tools and techniques as part of the management of change process ensures that the potential impacts are understood. This requires an in depth understanding of the change proposed, its potential impacts on current activities, operational interfaces, and the rail transport operator's safety

management system.

When a rail transport operator undertakes a risk assessment, the emphasis is usually on any new incidents or associated hazards that could arise from the proposed change. The assessment should also take into consideration any existing risks and common cause failures should be considered where the change is not independent of existing systems or functions. The rail transport operator should compare the level of risk before and after the proposed changes.

The rail transport operator should ensure that the new cumulative impact of all the hazards does not increase the overall risk of rail operations, without appropriate management. This may require the implementation of additional controls initially rejected because the benefit was marginally less than the resources to implement them. The RSNL requires that rail transport operators eliminate or reduce the risks to safety of their operation so far as is reasonably practicable. If the level of residual risk increases following a change it could be argued that the lower level of risk that existed before the change was introduced was clearly reasonably practicable and that the change which increased the level of risk is therefore not in compliance with the safety duty.

Therefore, as a general principle, rail transport operators should be endeavouring to achieve a level of residual risk following implementation of the change that is at least the same or better than the residual risk that existed prior to the implementation of the change. If an increase in residual risk is unavoidable, it would be prudent for the rail transport operator to keep records demonstrating why the lower level of risk is no longer reasonably practicable.

Risk assessments of proposed changes should extend to consideration of opportunities to improve previously existing risk controls.

Change may alter the balance of risk exposure to different groups. Rail transport operators should endeavour to ensure an equitable balance of risk exposure to affected groups. Where the change involves a potential increase in risks to another party, the management of change process should cover how those risks are likely to be increased and subsequently managed.

For example a change may reduce risk to a group, but introduce or increase risk to another group or an individual. In such circumstances there is a need to balance the risks affecting each group so that one group does not suffer very high levels of residual risk in order to reduce or remove the risk to the other.

Where existing risk controls are removed the decision should be documented, explaining what controls have been removed and why, and how the associated risks are to be managed.

<u>STEP 3 Evaluate levels of change and develop an implementation plan</u>

This step requires evaluation of the consolidated information gathered, further consultation (if practicable) with appropriate stakeholders and making decisions on the options available. The change and associated activities are identified and an implementation plan developed.

RSNL s46

The implementation plan should address a range of matters including:

- plans for introducing the change including all necessary modifications to the safety management system and regulatory approvals;
- communication, whereby important changes regarding operations, equipment and procedures are effectively communicated throughout the organisation;
- requirements for instruction and training;
- any additional resources required to implement the change, for example supervision or verification;
- documents that need to be revised, for example, operating procedures, risk registers, training material, interface coordination plans, emergency plans and management of change documentation itself; and
- plans for monitoring and reviewing the change following implementation.

Regulatory requirements and timeframes are an important part of the implementation plan. In considering the time at which to lodge an application for variation to accreditation, for example, an accredited operator will need to be mindful of the definition of railway operations; and the circumstances in which the accredited operator may be considered to have commenced any new railway operations not addressed in the scope and nature of the initial accreditation. For instance, an accredited operator would need to apply and have approved any application for variation to accreditation before constructing any railway, railway track and associated track structure or rolling stock.

Similarly, an accredited operator would need to have a variation approved before commissioning any new rail infrastructure or rolling stock. For this reason, the accredited operator will need to ensure that any application for variation of accreditation is submitted in sufficient time before the carrying out of any new railway operations to ensure compliance with the RSNL.

It is therefore advisable that the rail transport operator contacts the ONRSR early in the planning process to determine and initiate any regulatory requirements for the proposed change. Information from the ONRSR may better allow the rail transport operator to plan for notification or approval times (refer to the *ONRSR Policy: Regulatory Response to the Management of Change*) and improve the ONRSR's understanding of the project.

Guidance and tools to aid operators with identifying the regulatory requirements for their proposed change is available on the ONRSR website.

STEP 4 Document changes and obtain approvals

This step involves consolidating documentation on the change including any supporting records (such as external reports, quotes, or findings). The change should be clearly documented and gain internal sign off from the appropriately authorised person or persons within the rail transport operator.

An independent safety validation where the proposed change relates to major projects should be undertaken by an appropriately experienced and/or qualified person who is sufficiently independent from the change.

STEP 5 Review of safety management system

This step involves the rail transport operator reviewing, and revising where

necessary, its safety management system, risk register, emergency plans and interface agreements (see also section 2.19.3).

STEP 6 Implementation

Once a change has received the necessary internal and external approvals, the change may be implemented using the approved implementation plan.

It is essential that the approved implementation plan is fully carried out, including making all necessary modifications to organisational documentation, such as the safety management system, risk assessments and other operational documentation.

STEP 7 Monitoring and review

The following questions should be asked at this step in the management of change process:

- have any new risks eventuated or pre-existing risks increased after implementation? Have any pre-existing risks been reduced or eliminated?
- are additional risk controls, implemented as part of the change, appropriate?
- have performance targets for the change been set, and where applicable organisational key safety performance targets been reviewed?
- has training been provided to staff affected by the change?
- has a post implementation competency assessment been conducted to ensure the training provided was adequate for facilitating the change?
- is there a process to revise the risk assessment as new information accumulates?

Monitoring and review arrangements can be introduced immediately following the implementation of the change to ensure all risk controls, including training, have been effective, and that documentation has been updated.

## 2.14 Consultation

The rail transport operator must undertake consultation before establishing or varying the safety management system, and as part of a review. The safety management system must include systems and procedures to ensure that this consultation occurs. RSNL s99(3)

Consultation must be undertaken, so far as is reasonably practicable, with RSNL s99(3)

- persons who carry out railway operations, or work at the rail transport operator's railway premises or with the rail transport operators rolling stock and who are likely to be affected by the review or variation of the safety management system;
- health and safety representatives within the meaning of occupational health and safety legislation representing any of these people or entities;
- any union representing any of these people;
- any other rail transport operator with whom the rail transport operator has an interface co-ordination plan relating to risks to safety of railway operations carried out by or on behalf of either of them; and
- the public, as appropriate.

People or entities that carry out railway operations may include contractors, or personnel sourced from labour hire companies. Consultation processes must include reasonable opportunities for persons consulted to make

submissions on the safety management system and to advise them in a timely manner of the outcome.

In general, consultation with the public would be considered appropriate where the public may be affected by the establishment, review or variation of the safety management system. This may be where a control requires a particular action or understanding of the public to be effective. For example, it would be appropriate to consult with the public when installing a new door operating device on a passenger carriage.

Occupational health and safety legislation takes precedence over the RSNL to the extent of any inconsistency between the two. It is appropriate for a rail transport operator to seek to comply with OHS and rail safety consultation requirements through a single consultation process. Rail transport operators are encouraged to seek additional guidance from the ONRSR as required.

When undertaking consultation rail transport operators should bear in mind that effective consultation:

- occurs early, before the agenda is set and decisions are made;
- is planned, genuine and collaborative, within a process that is open and receptive to rail safety worker participation and where the rail transport operator is interested in and values rail safety workers' ideas;
- is characterised by mutual trust and respect between the rail transport operator and its rail safety workers;
- requires the application of interpersonal, facilitative and listening skills;
- includes a proactive role for rail safety workers, who are encouraged to suggest ideas;
- may require that training in communication skills and risk assessment be provided to enable effective participation by rail safety workers;
- requires the provision of relevant information;
- provides opportunities for feedback on issues raised, including opportunities for one on one communication where this is reasonably practicable; and
- results in outcomes that improve the safety management system.

## 2.15 Internal communication

### *2.15.1 Dissemination of information*

The safety management system must include systems and procedures for the dissemination of information about the content of the safety management system to people who are to participate in the implementation of the system or who may be otherwise affected by the implementation. Similarly it must also include systems and procedures:

Regulations
Schedule 1
Clause 14

- for the communication of the rail transport operator's safety policy and safety objectives to all people who are to participate in the implementation of the safety management system (see section 2.3 Safety Policy); and
- that support communication and the dissemination of information throughout, and between all levels of the railway operation.

Systems and procedures for the dissemination of information should:

- identify who needs what information, when they need it, and how that information will be collected, validated, documented, managed and disseminated, or otherwise provided; and
- ensure, so far as is reasonably practicable, that accurate information is provided to the relevant people in a timely manner.

Regulations Schedule 1 Clause 14(c)

### *2.15.2 Internal reporting of accidents and incidents*

The safety management system must include systems and procedures for the internal reporting of accidents and incidents involving the rail transport operator's railway operations, including accidents and incidents involving contractors and subcontractors.

Internal policies and procedures should be developed to minimise disincentives for reporting. For example discipline policies, reporting processes and response procedures should reflect a just culture approach. See also 2.4 Safety Culture.

Regulations Schedule 1 Clause 5(3)

### *2.15.3 Internal reporting of risks to safety*

The safety management system must include procedures for the reporting of risks to safety by personnel with safety responsibilities (refer also to section 2.6).

These processes should be integrated with risk management processes to allow assessment and control processes to be triggered. The processes should also allow for feedback to the person who notified the risk regarding action that has been taken.

## 2.16 Training and instruction

A rail safety worker should understand their role and responsibilities as part of the safety management system. The rail transport operator should therefore ensure its rail safety workers have a working knowledge of the safety management system and how their work relates to it.

The safety management system must include systems and procedures:

- for the training of rail safety workers who are to participate in the implementation of the safety management system or who may otherwise be affected by the implementation; and
- to encourage the awareness, understanding and participation of rail safety workers in the safety management system.

Regulations Schedule 1 Clause 15

It must also include provision for induction and ongoing training with regard to rail safety including information, instruction and training on new work practices, procedures, policies and standards, specified hazards and relevant control measures.

## 2.17 Risk management

Risk management is a critical activity of any organisation and the safety management system must support the management of risk, so far as is reasonably practicable, to ensure that risks are identified, assessed and eliminated or controlled.

A rail transport operator's safety management system must therefore include systems and procedures for the following: RSNL s99(1)

- identification of any risks to safety in relation to railway operations in respect of which the operator is required to be accredited;
- the comprehensive and systematic assessment of any identified risks;
- specification of the controls (including audits, expertise, resources and staff) that are to be used by the operator to manage the identified risks to safety and to monitor safety in relation to those railway operations; and
- monitoring, reviewing and revising the adequacy of controls.

Guidance on the design of a framework for managing risks is provided by *AS/NZS ISO 31000:2009 Risk Management- Principles and Guidelines.* The following guidance should be read in conjunction with this standard and its accompanying handbook *HB 89:2012*.

### *2.17.1 Principles of risk management*

For risk management to be an effective part of an overall safety management system, rail transport operators should follow the risk management principles described in *AS/NZS ISO 31000:2009,* which recognise that Risk Management:

- Creates and protects value
- Is an integral part of all organisational processes
- Is part of decision-making
- Explicitly addresses uncertainty
- Is systematic, structured and timely
- Is based on the best available information
- Is tailored (to the risk profile of the organisation)
- Takes human and cultural factors into account
- Is transparent and inclusive
- Is dynamic, iterative and responsive to change
- Facilitates continual improvement of the organisation.

These fundamental principles support the integration of risk management into the overall safety management system and organisational processes.

### *2.17.2 Identification of risks to safety*

Rail transport operators must, in their safety management system, identify and assess any risks to safety. Risk to safety is inclusive of risks arising from physical hazards, hazardous events, or latent conditions such as organisational factors. In the following discussion reference to 'hazards' should be read as inclusive of all sources of safety risk. RSNL s99(1)

Documentation should demonstrate that the rail transport operator is aware of the sources of safety risk (hazards) specific to its railway operations, together with any interface issues.

Hazards contributing to the overall risk of the operation, including those which refer to catastrophic or fatal consequences should be recorded, together with associated hazards or precursors. A 'precursor', is a system failure, sub-system failure, component failure, human error or operational condition

which could individually or in combination with other precursors (cause) result in the occurrence of a hazardous event. For example, a broken rail, signal passed at danger (SPAD) or dragging brakes are precursors to the hazardous events derailment, collision and fire respectively.

The RSNL requires the accredited rail transport operator's safety management system to have procedures for the identification and assessment of risks. The risk register required for inclusion in an operator's safety management system must list risks, assess (including rank) risks, and describe controls for risks.

RSNL s99 (1)

Regulations Schedule 1 Clause 16

The identification methods used should be appropriate to the magnitude of the risks involved and specifically tailored to address technical, operational and organisational issues. A systematic approach should be evident to ensure that all parts of the organisation's activities have been covered, including where there are interfaces with other parties or infrastructure (see also section 2.23 Safety Interface Coordination).

The methods used should also be capable of identifying where a combination or sequence of events could lead to a major accident. While historical information from the rail transport operator or similar organisations may be a good starting point in identifying incidents and hazards, organisations should be able to show that they have used, and will continue to use relevant information from analysis of failures, investigations, audits and inspections, overseas experience, and group exercises.

The rail transport operator should give consideration to hazards:

- associated with infrastructure features, such as tunnels, bridges, underground stations;
- associated with rolling stock features, such as traction type, passenger or freight usage, type of freight (eg dangerous goods), crash worthiness;
- associated with specific locations or geographic areas;
- associated with interfaces with the road network or any other interfaces;
- affecting specific particular groups such as passengers, the public, railway safety workers etc;
- associated with human factors (see 2.18 Human Factors);
- arising from:
  - normal operations;
  - abnormal/emergency operations;
  - maintenance;
  - planned changes (either permanent or temporary);
  - activities of third parties (e.g. trespass and vandalism); and
  - other non-routine activities.

The populations affected by the hazardous events should also be identified, including any group who are especially at risk, such as contractors or other rail transport operators.

The quality of both the identification and assessment of hazards and risks is dependent upon a comprehensive understanding of what makes the system work in terms of the human factors, equipment, infrastructure and relationships between them.

As well as the rail transport operator having access to engineering technical expertise and procedures for identifying ways in which equipment could fail and result in an incident, human factors expertise should be identified. Examples of the application of human factors into rail safety can be found in Appendix B of AS 4292.1 (2006).

Where a rail transport operator intends to sub-contract design the delivery of part of a railway, it would be expected that the sub-contractor would be required to procure or supply engineering and human factors design expertise. However, the rail transport operator should have sufficient capability to assess the quality of the engineering or human factors that is being delivered, and to determine how it could contribute to an incident associated with their railway operations (see also section 2.13 Management of change).

### *2.17.3 Risk assessment*

In conducting an assessment of identified risks a rail transport operator must examine and analyse each risk, including: RSNL s100(1)

- the nature of the risk
- the likelihood of the risk occurring
- the magnitude and severity of the consequences should the risk be realised
- the range of control measures available to eliminate or minimise the risk
- the cumulative impact of the risk with regard to other risks

The purpose of risk assessment is to provide the necessary information to make decisions regarding the acceptability of the risk and the reasonable practicability of the commitment of resources to accident prevention and reduction. A rail transport operator's risk assessment process must be appropriate to the risk and should be able to reduce uncertainty by providing a framework for the incorporation of all available information regarding the costs and risks of various alternatives. Risk assessment can therefore also be used to determine if a proposed activity is acceptable in those situations where it is impractical to eliminate or control particular hazards. RSNL s46 RSNL s47 RSNL s100(1)

Generally, unless the likelihood and degree of harm is disproportionately low compared to the costs and likely benefit of the measure, the NRSR will expect rail transport operators to implement appropriate safety measures.

In meeting this requirement, judgement is required for selecting the appropriate methodology and depth of analysis, taking into account the nature and scale of the hazards and risks (*HB 89:2012* provides guidance on risk assessment considerations and techniques). The level of detail of the assessment should be sufficient to give confidence that all significant contributors to risk have been evaluated and that the controls/mitigation necessary to combat the risks have been identified and are in place or are to be put in place in the safety management system. Whatever the method chosen, it should reflect specific operational issues and not just generic railway operations. The rail transport operator should also have processes in place to ensure local task risk assessment procedures link into the organisation wide risk assessment processes.

The risk management procedures of the rail transport operator's safety management system should describe the methodologies of identifying and assigning values to the levels of likelihood and consequences and what controls have been taken into account. In assigning levels of likelihood and consequences, documentation should record any assumptions made and recognise uncertainty in assumptions made.

The purpose of assigning levels of likelihood and consequence is to help determine whether the risk requires additional control measures, where the risk reduction is balanced against the costs of additional control measures. In such assessment there are two dimensions of consequences that should be considered:

- direct physical losses, involving assets and people
- indirect costs (lost time, administrative, legal, and replacement of services).

Both dimensions should be considered if the risk assessment is to be complete and consequences are to be treated consistently on a systematic basis. The simplest way to treat the various types of consequences is to assign units to each of the identified consequences. Monetary units (dollars) have the advantage of permitting a direct comparison of the dollar cost of risk reduction against the expected loss.

Once an analysis of risk has been made, decisions can be made regarding the need for risk treatment. Termed 'risk evaluation' this involves comparing the level of risk found during the analysis process with established risk criteria. Stakeholder views should be considered in determining risk criteria.

Assessment should not be a one-off activity, but should be part of the process of continuous improvement. It is important that the rail transport operator is able to demonstrate that assessments are reviewed and updated at appropriate intervals or when there is any reason to suspect they may no longer be valid, for example, following an accident, incident or near-miss, as significant new information becomes available, or when there have been significant changes to working procedures. A review of the risks in anticipation or response of change should be consistent with the rail transport operator's management of change procedures (see also section 2.13 Management of change).

Reviews of risk analyses and assessments should form part of standard management practice. The time between such reviews should relate to the extent and nature of the risks involved, and the degree of change likely in the work activity. The proposed time between reviews should be stated by the rail transport operator in the safety management system. As well as reviewing the assessments, auditing and verification of key risk controls identified during risk assessment is a critical activity to ensure that the rail operators are controlling their risks.

### *2.17.4 Consider risks cumulatively*

In conducting an assessment, the rail transport operator should consider risks cumulatively as well as individually. Where a major risk involves a number of hazards or a chain of events, the rail transport operator needs to understand the likelihood of each hazard or event in the chain occurring and

the likelihood of them escalating to a major incident.

Many major incidents in the past have been caused by the realisation of a number of risks concurrently. For example, a station fire may arise from an escalator fault, but probably only if the fire suppression systems do not work, or cleaning is inadequate.

Clearly this cumulative consideration is necessary in order to understand the full range of incidents, their contributing factors, and the controls. In relation to this, the rail transport operator should give consideration to the possibility of common mode failure mechanisms which can cause several failures to occur simultaneously, significantly increasing the chances of an incident.

For any incident there may be several independent hazardous events, each of which could lead to that incident. Similarly, there will be several control measures which may be particularly critical because they may impact on one or more of those events. A comprehensive and systematic assessment of risks should give an understanding of the total likelihood of each incident and the relative importance of each separate hazardous event and control measure.

This is needed in order to provide measures of the most important causes and controls.

Some control measures may often only be recognised as critical or justified because of their cumulative impacts on several risks. In cases where a large number of different hazards and potential incidents exist, the cumulative risk may be significant even if the risk associated with each potential incident is low. Cumulative consideration of risks enables the operator to assess the overall picture of rail transport operator risk, and to understand how different causes and events can combine to lead to an incident. It also enables the key contributors and controls for the risk to be identified and evaluated in more detail if required.

### *2.17.5 Appropriate analysis methodologies: qualitative, semi-quantitative or quantitative*

The rail transport operator should use analysis methodologies (whether quantitative or qualitative) appropriate and proportionate to the risk being considered. Methods of analysis should reflect the complexity of the system. Examples of where and how the different methods may be appropriate are given below.

Qualitative

Where risks are well understood and cannot credibly result in catastrophic consequences a qualitative approach may be appropriate. Qualitative analysis should be informed by the best possible use of information, including quantitative data, where available. It should be recognised that a limitation of qualitative assessments is that there is little indication on an absolute scale of how serious the risk might be, particularly for comparison with other risk sources.

Semi-Quantitative

A semi-quantitative analysis could be used where the nature of the risk and causation are well understood, for example station fires, incidents around the

train-platform interface. If using a semi-quantitative analysis approach, it is important that the results are not interpreted as providing a finer level of detail than is actually contained in the initial descriptive rankings.

A semi-quantitative analysis may take the form of a risk matrix that mathematically manipulates the valuation of consequence and likelihood. Typical risk matrices for rail operators range in size from 3 x 3 to 6 x 6. Examples of risk matrices and consequence and likelihood scales may be found in *HB 89:2012*. Risk increases diagonally across the matrix, and bands of broad risk levels can be established on the matrix to show areas where risk is intolerable, and where risk is tolerable subject to all practicable measures being taken and subject to continuous improvement.

Rail transport operators should note however, that while the risk matrix approach may be useful in ranking risks and supporting a demonstration of adequacy, it is unlikely to be sufficient as the only assessment tool used by rail transport operators. For example, additional analysis of the effects of alternate control measures is likely to be needed as a risk matrix is often too coarse a tool to distinguish between options. It may also be difficult to fully address the requirement for cumulative consideration of hazards using risk matrices alone.

Quantitative

A quantitative analysis would be expected for incidents that could credibly have catastrophic consequences, or for which the causation of the consequences is not obvious or well understood. One of the main benefits of adopting a quantitative approach is that it provides a framework within which all risks can be evaluated on a common (quantified) basis, thereby allowing the significance of individual risks to be assessed in the context of the system as a whole. A quantitative approach can also be used to evaluate the benefit of measures intended to improve safety, so that expenditure can be prioritised on the basis of cost effectiveness, while also enabling rail transport operators to demonstrate that risks are reduced so far as is reasonably practicable.

Other important concepts to be considered within and after the assessment stage:

- ensure that the sensitivity of results to changes in assumptions is discussed and quantified where possible. Where assumptions are based on data from other railways, the documentation should contain an explanation of why it is believed the data is applicable. Where risk control measures have been identified, their effect upon the results of assessments should be shown.
- it is essential that action is taken as a result of the findings of assessments and that controls are implemented and their effectiveness reviewed.

### *2.17.6 Documentation of assessment*

**Rail transport operators must document all relevant aspects of risk identification and assessment.**

Regulations Schedule 1 Clause 7

This includes keeping a detailed record of:

RSNL s100 (2)

- the risks considered; and
- the likelihood, severity of consequences and control measures considered, including reasons for selecting certain control measures and rejecting others.

It may also be useful to operators to record the names of persons and roles involved in the risk assessment.

Identification and assessment should use consistent and documented data. All steps in the process should be traceable and the information gathered and used should be documented to permit review of the work and to ensure reproducibility, to help understand the assumptions made, and to help validate results. Keeping a record of the decisions and reasons for selecting certain controls over others forms a valuable part of this process.

Documentation regarding risk control implementation should identify responsibilities, schedules, expected outcomes, performance measures. Reference should be made to the processes for monitoring and review of risk control effectiveness in the rail transport operator's safety management system.

The large amount of information on identified risks, and their associated likelihood and consequences, should be integrated into a reviewable format. The reasons for selecting certain controls over others may be recorded in the same document or separately, in a format that is usable for the rail transport operator. This may be as the minutes of meeting discussions on risk control measures, for example.

It is good practice to keep thorough records for reference when conducting follow up risk assessments or change management activities, to better understand the assumptions and issues that formed part of the original decision-making.

Indicative examples of risk registers and risk treatment plans can be found in HB 436:2004[1].

Such summary formats are likely to reference more detailed work and should be modified according to the analysis methodology used.

### *2.17.7 Documentation of risk control measures*

The rail transport operator's safety management system must specify the controls (including audits, expertise, resources and staff) to be used by the operator to manage risks to safety and to monitor safety. This should be more than listing the controls for the current environment at the time of accreditation. Processes to consider possible new controls and continually reduce risk should form part of a rail transport operator's safety management

RSNL s99(1)(e)

[1] HB 436:2004 Risk Management Guidelines, companion to AS/NZS 4360:2004

system.

The description of risk control measures and their implementation should identify responsibilities, risk treatment schedules, expected outcomes and performance measures. Reference should also be made to the processes for the monitoring and review of risk controls. These elements are likely to be audited by the NRSR to verify that the identified risks of incidents are being controlled as described within the risk assessments.

In some cases, compliance with a recognised standard (such as an Australian standard) or approved code of practice (RSNL s249) may constitute a suitable control measure. However, the rail transport operator should demonstrate how the standard is linked to the risk and whether it deals with all aspects of that risk or only part of it. Where a standard or code of practice is detailed and prescriptive, further explanation of how it is to be applied may not be necessary. Where a standard or code of practice allows different ways of achieving compliance the rail transport operator should say which control measures are used.

### *2.17.8 Risk register*

The safety management system must include a risk register. RSNL s99(1)(c)

The risk register must include:

- a listing of the risks to safety identified;
- details of the assessment of those risks (including their likelihood, likely consequences and ranking); and
- a description of any elimination or risk control measures that are to be used to manage, so far as is reasonably practicable, those risks, including, where appropriate:
  - the identification of who is responsible for implementing the measures; and
  - a reference to the general location or locations in the safety management system where more details on the measures can be found.

Regulations Schedule 1 Clause 16(2)

The safety management system must also contain procedures to ensure the details in the risk register are current, so far as is reasonably practicable. Examples of risk registers can be found in *HB 436:2004 Risk Management Guidelines Companion to AS/NZS 4360:2004*, as well as in many proprietary risk management software products.

Regulations Schedule 1 Clause 16(3)

Whatever style of register is used, the information that it contains should include as a minimum the area, activity function, or scope that the register relates to, such as:

- information showing when the register was last amended or reviewed;
- a brief description of each potential risk, including a summary of the main hazards;
- other organisations responsible where the risk is not under direct control;
- existing control measures applicable to each hazard;
- control measures proposed for future implementation together with a plan for implementation;
- estimated levels of consequences, likelihood and risk with existing

controls and with proposed additional controls implemented;
- references to supporting data and risk assessments undertaken;
- references to 'so far as is reasonably practicable' assessments and additional controls considered;
- risk controls that have been considered, but rejected;
- cross-references to the safety management system;
- standards applicable to the risk controls, including key engineering, operational and maintenance standards applicable to each control measure;
- nomination of person responsible for each risk control.

The register should identify, prioritise and give references to the management measures to control or mitigate significant risks. This should include risk to employees, passengers, public, contractors and any other operators who may be affected. Risks that arise at interfaces or are under the direct control of other parties should be included in the register.

The key role of the risk register is to record the relationship between control measures and their associated risk. It is important that the rail transport operator understands that the risk register is a live document that will require regular updating. The rail operator's safety management system must include systems and procedures for the review and revision of the adequacy of control measures. Review of control measures may be necessary in the light of new information, new technology, incidents, on-going deterioration, remedial works, or other changes that may affect risks.

RSNL s99(1)(f)

The risk register should be regularly reviewed and updated, including as part of the review of the safety management system (see section 2.9 Review of the Safety Management System). In reviewing the risk register a rail transport operator should ensure that:

- significant hazards are identified and there are no obvious omissions when compared with industry norms;
- the risk assessments reflect the real situation;
- the consequences and probabilities quoted, and the overall findings, make sense when benchmarked with industry performance and accident history;
- immediate and underlying causes of recent incidents in the rail transport operator's own and others' operations are addressed;
- the register recognises the catastrophic risks associated with the rail transport operator's railway operations;
- for each significant incident, the documentation sets out the control measures which prevent it from being realised;
- references between each risk assessment and the safety management system are specific, so that the link is clear;
- where it is reasonably practicable, risks have been avoided or eliminated at source;
- the effectiveness and reliability of the control measures have been periodically assessed, particularly with respect to human reliability where operator behaviour is a critical control measure.

The need to keep a risk register updated introduces a necessary interface with asset management systems in order to ensure that works undertaken and changes in asset condition are reflected in the register. Such a link

should be evident in the rail transport operator's safety management system.

### *2.17.9 Prioritising rail safety work*

The rail transport operator's safety management system should contain processes to ensure, so far as is reasonably practicable, that rail safety work is prioritised so that those hazards representing the greatest risk are given priority. However, it should be recognised that not treating a risk because a higher priority risk is treated does not necessarily mean risks have been reduced so far as is reasonably practicable.

In general, the greater the initial level of risk, the greater the degree of thoroughness required to demonstrate that risks have been reduced so far as is reasonably practicable. It would be very difficult to provide a quantitative demonstration for all the hazardous events and precursors identified. The essence of the legislative requirements is not associated with providing a detailed quantitative assessment for every hazard, but a demonstration which provides confidence that risk is being managed by the rail operator in a comprehensive, structured and auditable way.

However, the control of hazards with associated catastrophic consequences, such as train to train collisions, train collisions with terminal infrastructure, and derailment should be demonstrated quantitatively.

## 2.18 Human factors

Regulations Schedule 1 Clause 17

The safety management system must include procedures to ensure that human factors matters are taken into account during the development, operation and maintenance of the safety management system, and for the integration of human factors principles and knowledge into all relevant aspects of the operational and business systems.

This section provides an overview of the integration of human factors within the safety management system.

### *2.18.1 What is 'human factors'*

Human factors is a field of applied scientific knowledge, drawing from established disciplines such as psychology, biomechanics, physiology, and engineering. Human factors is concerned with the study of people as components of complex, socio-technical systems, such as railways.

There are two main dimensions of human factors. These are: the capabilities and limitations of the individual person; and, the collective role of all the people in the system, which includes factors such as organisational culture. Human factors is concerned with understanding the performance of the individual, and of the team as a whole.

The practical application of human factors knowledge contributes to improved performance and safety of systems, in our case, the rail system.

Note: When the term human factors is used in the following text it refers to the discipline as defined above.

### *2.18.2 Integrating human factors into the safety management system*

As described in Part 3 of this guideline, risk management is the driving force behind the safety management system. Risk management systems and procedures provide the information required for the development of the rest of the system. The integration of human factors within the safety management system should be driven by the integration of human factors within risk management systems and processes.

Risk assessments and reviews of risk assessments should identify those areas where human involvement in the system presents a safety risk, identify the level of human factors analysis required based on the safety criticality of the human action or activity, and based on an appropriate level of human factors analysis identify appropriate risk controls.

This provides a process that ensures the systematic identification and analysis of relevant human factors issues and the application of appropriate tools, methods and measures to address such issues. The management of human factors issues should not be seen as a standalone activity.

Integration of human factors is regarded as essential in many aspects of operational and business systems that make up the safety management system, including (but not limited) to:

- risk management;
- management of change;
- design and procurement of systems, equipment and machinery;
- job and task design;
- training of rail safety workers;
- safety reporting and data analysis;
- incident investigation.

Risk assessments may identify additional aspects or operational and business systems where integration of human factors needs to take place.

Human factors integration is about ensuring that processes are in place to:

- identify and analyse any human factors requirements associated with relevant safety critical projects or activities; and
- implement and monitor these requirements.

Human factors integration processes need to be planned and implemented in the early stages of a project to ensure adequate time for human factors activities to be conducted and findings incorporated.

Human factors integration processes have particular application in design projects (e.g. control centres, train cabs, driver safety systems), management of change projects and risk management activities. Generally, the extent of the impact on safety will determine the extent of the human factors activities.

### *2.18.3 Generic human factors processes*

The following generic human factors processes support the integration of human factors into operational and business systems.

Identification and analysis:

- identification of the people who use the equipment, interact with the system, are affected by change etc;
- involvement of users in the design and assessment of systems of work;
- understanding the broader operational context in which work is performed;
- analysis of roles and tasks people (will) perform;
- assessment of tasks for the potential for human error;
- identification appropriate strategies for mitigating the risk of error.

Implementation and monitoring:

- implementation of recommended human factors solutions, i.e. implementation of appropriate strategies for mitigating the risk of error;
- monitoring and review of implemented design, risk mitigation measures, etc. to ensure their suitability;
- documentation of human factors issues and associated risks and their integration into relevant project planning and documentation (e.g. change management plan, risk register).

A range of different methods can be used to support these basic processes. Choice of method will be determined by many things such as the issue itself and its safety criticality.

### *2.18.4 Integrating human factors in risk management*

A rail transport operator must have a safety management system that: RSNL s99(1)

- identifies any risks to safety in relation to railway operations in respect of which the operator is required to be accredited;
- specifies the controls (including audits, expertise, resources and staff) that are to be used by the operator to manage the identified risks to safety and to monitor safety in relation to those railway operations.

Risks arising from the involvement of human activity should be assessed as part of the risk management process. Of particular relevance are:

- **processes to ensure that the potential for human error is systematically addressed and integrated into all relevant risk assessments. These processes may be qualitative or quantitative or both as determined by the rail transport operator.**

  Key steps in identifying and assessing human factors risks are:
  - Identification of the people who interact with the system (whether the system is a piece of equipment, procedure, software, or instrumentation, etc). The focus should be on those people who are most likely to affect safety.
  - Identification of the activity being assessed.
  - Identification and recording of the different tasks people perform. Where a potential risk is identified, the task needs to be described

before the potential for failure can be assessed. The level of task detail required depends on the risk involved.
- Assessment of the task for the potential for error and violations and identifying the types of error / violations that could occur and how they may affect safety.

Where the potential for error is high and the task is critical for safety, a detailed task analysis should be performed and the factors that influence performance identified, specialist support may be required.

> **processes to establish specific controls that address the potential for human error.** In order to be most effective, these controls should be directed at:
  - reducing the likelihood of error.
  - supporting the detection and correction of errors when they occur.
  - ensuring the containment of and reduction in, the severity of the consequence of errors that persist uncorrected.

Typical control measures for error include: equipment design, task and job design, workplace design, procedures, training, communication, team work, supervision and monitoring etc. Identified risks should be recorded and controls integrated into the relevant operational and business systems that make up the safety management system.

### *2.18.5 Management of change*

Change has the potential to introduce new or exacerbate existing human factors risks. For example, changes in machinery, equipment, technology, procedures, work organisation or work processes are likely to increase the potential for human error unless appropriately managed.

At a minimum the following steps should be taken:

1. Identify the people affected by the change.
2. Describe the tasks they perform that are affected by the change.
3. Identify the potential for error as a result of the change. Special consideration should be given to the ‘transition period’.
4. Determine who needs to manage the human factors aspects of the change and what needs to be done.
5. Document and integrate identified human factors risks and controls into the change management plan.

See also section 2.13 Management of change.

### *2.18.6 Design and procurement*

The design of equipment, plant and machinery can seriously affect human performance. Well designed interfaces such as display and control systems, alarm and warning systems, signalling and cabs, can significantly reduce the risks associated with human performance. The risks associated with poorly designed interfaces are best avoided by starting human factors activities as early as possible in the design process.

Steps should be taken to ensure that the *human-machine interface* (HMI) is designed with the user in mind (taking into account human capabilities and limitations, both physical and cognitive). This is generally known as 'User

Centred Design' and incorporates the following steps:

1. Specify the user requirements:
   - identify the user(s) of the system/equipment/product.
   - understand the operational context in which the system will be used.
   - specify the requirements of the users and the organisation.
   - identify the risks associated with humans in the system.
   - determine how functions should be allocated between the technology and the people so that human strengths are supported and weaknesses compensated for.

2. Apply good human factors practice during design and development:
   - incorporate user requirements in the design process. User requirements should include the needs of users arising from the limitations of human capability.
   - identify requirements for new procedures, skills and/or training.
   - involve users in the early and subsequent stages of the design.

3. Evaluate the design through the use of mock-ups and prototypes with the users of the system early on in the design process so that user feedback and performance can be used to inform the design.

### *2.18.7 Job and task design*

Appropriate job and task design improves performance and decreases the potential for human error. Poor task design can have a negative impact on performance. For example, tasks that involve excessive time pressure, complex sequences of operations, memory dependence or physical/ mental fatigue are more difficult to complete without making an error.

Steps should be taken to ensure that tasks and activities are appropriate and suited to the human operator’s capabilities and limitations both physical and cognitive.

### *2.18.8 Training of rail safety workers*

Training of rail safety workers directly affects their ability to respond appropriately when things happen that pose a threat to safety.

Training needs analysis provides the basis for an effective and efficient training program. For safety critical functions this should be risk-based to ensure that training resources are appropriately targeted.

Where applicable, training should cover the use of strategies to prevent and recover from errors that are made.

### *2.18.9 Safety reporting systems and data analysis*

The objective of any safety reporting system (including data collection and analysis), is to identify safety trends and understand their origins so that effective corrective action can be taken.

It is important to identify the systemic issues and related human errors which contribute to occurrences. Individual or group error (eg. communication break downs, incorrect decisions, misperceptions etc.) and the factors which caused them are often the same whether they lead to accidents, incidents or near misses. Therefore, data from incidents and near misses can provide a

powerful tool for accident prevention.

A reporting system should be in place, which collects information about notifiable occurrences, and other incidents, hazards, near misses and errors that might otherwise go unnoticed. This information should be classified to enable efficient analysis. The contributing factors framework (CFF) is one example of a classification system.

Staff should be trained and encouraged to report adverse events with apparently minor significance, to help avert more serious incidents. Systems to encourage open reporting include:

- non-punitive, confidential hazard and incident reporting systems;
- formal and informal meetings to discuss safety concerns;
- feedback from management about action taken as a result of hazard and incident reports or safety meetings.

See also section 2.15 Internal Communication.

### *2.18.10 Investigation*

The main purpose of investigating an accident or incident should be to understand what happened, how it happened and why it happened in order to prevent similar events in future. The human factors component of investigation should be based on a model or framework for systemic investigations considering human error, both at the individual and organisational levels. A number of human error models and accident causation models (such as Reason's models) have been developed over the last two decades to aid in understanding how humans err and how accidents/incidents occur in the larger context of the systems in which these accidents/incidents take place.

Procedures should include the requirement to investigate human factors issues. Investigators should be trained in basic human factors concepts, and procedures should be designed to examine the human performance factors that may have contributed to the event. These include the systemic sources of the failure (e.g. component failures, design deficiencies of equipment, infrastructure and rolling stock, inadequate procedures, and lack of training).

## 2.19 Procurement and contract management

Rail transport operators remain responsible for the safe conduct of their railway operations, irrespective of whether or not activities are contracted to other parties. It is not permissible for the rail transport operator to enter into a contract that purports to exclude, limit or modify any safety duty. That is, the principal cannot contract out responsibility for safety, and retains responsibility to the extent that they can exercise control irrespective of the details of the contract entered into.

RSNL s51(1), s262

As the principal, a rail transport operator must provide, so far as is reasonably practicable, supervision of rail safety workers and take all reasonably practicable steps to ensure that information is provided to other rail transport operators and other persons on the railway premises under the control or management of the operator, as is necessary to ensure those persons to ensure their safety.

RSNL s52

As a purchaser, a rail transport operator must take all reasonably practicable

RSNL s52

steps to ensure that goods or services provided to the rail transport operator are of an appropriate standard and specification to ensure the safety of the railway operations.

RSNL s119

Contractors are required to comply with the safety management system of the rail transport operator when they are engaged to undertake railway operations on or in relation to rail infrastructure or rolling stock.

In cases where a rail transport operator's safety management system does not specifically cover the activities the contractor is to be engaged in, a contractor may operate under its own safety management system, where the principal and contractor have assessed that the safety management system is appropriate and meets the required safety standards. There would still be interaction between the two safety management systems, for example in reporting and overseeing the contractor activities, and this should be captured in contract arrangements (see also effective management and control as a pre-contract consideration under 2.19.1).

Designers, manufacturers and suppliers who design, commission, manufacture, supply, install or erect anything that they know or ought reasonably to know is to be used in connection with rail infrastructure or rolling stock must ensure, so far as is reasonably practicable, that the thing is safe if used for its intended purpose.

RSNL s53

The principal's safety management system must include systems and procedures:

Regulations Schedule 1 Clause 18

- to ensure that safety duties under the national rail safety legislation are being met under contracts, and procedures for the taking of remedial action where necessary; and
- to ensure that goods and services provided to the railway operation meet the standards and specifications required for the safe operation of the railway.

Implementation of an appropriate management system is especially important where the maintenance and engineering support for key safety assets is contracted to other parties. The safety management system should include processes for establishing a contract. It is important that a consistent process is followed, as it is in the course of these processes that safety issues are identified and addressed.

### *2.19.1 Pre-contract activities*

The safety management system must include systems and procedures:

Regulations Schedule 1 Clause 18

- for the review of tender documents and contracts to ensure that safety requirements under the safety management system are adequately defined and documented;
- to ensure that the terms of any tender documents or contracts do not lead to unsafe work or an activity that may affect the safety of railway operations; and
- for the selection and control of contractors.

To achieve this, the systems and procedures should support the following pre-contract activities:

- gaining a clear understanding of what work contractors will undertake, or the specifications for goods procured;
- identifying, analysing and evaluating the risks that are related to the work to be undertaken and identifying ways of eliminating and controlling those risks where this is reasonably practicable for the principal;
- setting or approving the conditions that the contractor must work to, for example:
  - requirements in relation to the contractor's compliance with the rail transport operator's safety management system;
  - contractor to provide the principal with written safe systems of work for railway operations to be undertaken prior to commencement of the work, and subsequently comply with those safe systems of work;
  - competency standards;
  - retention of safety related records that are accessible at all times;
  - safety performance standards;
  - adherence to safety standards or laws applying to the work in question.
- ensuring that any conflict between the specified rail safety requirements and those contained in a tender or proposal are resolved before a contract is awarded;
- reviewing the capability of a contractor to meet the specified railway safety requirements of a contract before it is awarded. This includes reviewing the processes used by a contractor to engage a sub-contractor during the course of a contract. The contractors' systems must be sufficient to ensure, so far as is reasonably practicable, that the capabilities of the proposed sub-contractor are appropriate to meet the specified railway safety requirements.

The principal and the contractor must also consider who has effective management and control of the planned railway operations when determining safety arrangements, and ensuring that the appropriate party is accredited. For example, an accredited rolling stock operator contracted to move rolling stock for a rail transport operator may have a more appropriate safety management system. In this case, the principal may not even be accredited for the movement of rolling stock. Consideration of this when determining effective management and control is an important part of pre-contract activities.

The test of who has effective management and control is explained in more detail in the *ONRSR Guideline: Effective Management and Control.*

### *2.19.2 Contract management activities*

The safety management system must include systems and procedures for control of contractors and to ensure the monitoring of the performance of contractors, including conducting or commissioning audits of the contractor's performance in relation to the safety aspects of the contract.

Regulations Schedule 1 Clause 18(c)

To achieve this, systems and procedures should support the following contract management activities:

- regular recording and reviewing of the performance of contractors, including audits of the contractor's performance in relation to the safety aspects of the contract – this should include field inspections of the contractor at work where appropriate. Where a contractor engages a sub-

contractor for railway operations, supervision of the contractor by the rail transport operator should include monitoring the contractors

- supervision of sub-contractors and may require the rail transport operator to conduct field inspections of subcontractors at work;
- verification that the supplied product or service, including those supplied from within the rail transport operator, meet railway safety requirements prior to acceptance and for quarantining and withholding those that have not been cleared for use;
- verification that spares, components and specialist tools for use on safety critical equipment that have been produced to a revised specification or standard are reassessed to validate suitability for their rail safety function;
- documentation of requirements applicable to shelf life and storage conditions of spares, components and tools;
- ensuring where appropriate, that the manufacturer or supplier of goods may be identified through batch or other identification;
- verification where appropriate, that any delegated authorities are appropriately exercised; and
- action to remedy matters if safety requirements, for example work quality or engineering standards, are not being met.

Monitoring of contractor performance should be undertaken proactively in the absence of occurrences or other reported events, as well as when an occurrence or other reported event has taken place. Review of the performance of sub-contractors may be achieved by review of the contractor's records of performance monitoring they have undertaken. It may also be necessary to undertake some field inspections of the subcontractor as part of the check of the contractor's sub-contractor management.

### *2.19.3 Review process*

In order to facilitate improvements in the contract management system, the rail transport operator should have procedures in place to review safety information provided from agreed performance indicators and the auditing of contractors.

It is expected that the review process should address the following in relation to the safety of the railway operations:

- the entire contractor management process from the decision to use contractors to the review at the end of the contract including the outcomes of the audit process;
- the contractor's involvement in the review process;
- the arrangements for the dissemination of outcomes from the contract review to affected parties;
- the process for recording the lessons learned from the contract review; and
- the process for feeding the lessons learnt back into each stage of the overall process from procurement and selection of contractors or suppliers, through technical and performance standard setting, to management of the actual work.

## 2.20 General engineering and operation systems safety requirements

The safety management system must include:

Regulations
Schedule 1
Clause 19

- a documented set of engineering standards and procedures, and operational systems, safety standards and procedures, to cover the following, and, if relevant, the interface between any two or more of them:
  - rail infrastructure;
  - rolling stock; and
  - operational systems.
- details of the implementation and updating of these documents as required by the document control arrangements (also see section 2.8 Document control arrangements and information management).
- procedures for the control and verification of the design of structures, rolling stock, equipment, and systems, in accordance with the engineering standards and procedures, and operational systems safety standards; and.
- systems, procedures and standards for the following in relation to rail infrastructure and rolling stock:
  - engineering design;
  - construction and installation;
  - implementation and commissioning;
  - monitoring and maintenance;
  - system operation;
  - modification; and
  - decommissioning or disposal.

Safe work procedures should include, but are not limited to:

- a description of the activity;
- identification of the person or position that has a supervisory responsibility for the activity or process;
- a clear explanation in sequential order, of the steps or stages comprising the procedure or process;
- identification of potential hazards in the process;
- identification of safety controls to minimize potential risk from any identified hazards;
- recovery actions should the risks associated with the hazards be realized;
- mechanisms for reviewing procedures;
- record keeping requirements; and
- document control information.

Design control procedures should include (but are not limited to) the following:

- identification of the responsibility for each design or development activity.
- safety risk review at both the design input and design output stages taking into account reliability and maintainability.
- assignment of design verification and validation functions.
- control of design changes.

Verification is the testing and evaluation of an item of equipment or system to

assure compliance with its specification and other requirements.

Validation is confirmation that the particular requirements for a specific intended use are fulfilled.

Further guidance on engineering standards and procedures is available in AS4292 parts 2- 5. Guidance on the integration of human factors in design and procurement are provided in section 2.18 Human Factors.

## 2.21 Process control

Process control provides controlled conditions for the carrying out of railway operations. These are achieved by:

- establishment and appropriate application of standards and procedures;
- effective monitoring to ensure standards and procedures are being adhered to; and
- corrective action in response to deficiencies identified (see section 2.12).

The safety management system must include:

Regulations Schedule 1 Clause 20

- procedures for the rail transport operator to monitor its compliance with the standards and procedures specified in section 2.20, including procedures for the inspection and testing of safety related engineering and operational systems;
- procedures for the control, calibration and maintenance of all equipment used to inspect or test rail infrastructure or rolling stock; and
- arrangements for the establishment and maintenance of inspection and test records to provide evidence of the condition of rail infrastructure or rolling stock.

Procedures for inspection and testing of safety related engineering and operational systems should define the location, method, level of detail and frequency of inspection and testing. Frequencies of inspection and testing should consider operational criteria, rate of deterioration, consequences of failure and frequency of occurrences. Inspection and testing should be undertaken according to a set schedule and in response to defined events.

Records should be created and maintained that provide evidence of the condition of all elements critical to railway safety, in accordance with section 2.8 Document control arrangements and information management.

Inspection and testing processes should include links to processes for corrective action as required in section 2.12.

## 2.22 Asset management

Regulations Schedule 1 Clause 21

Rail transport operators should adopt a strategic approach to managing the safe operations of assets, as part of their risk management framework and as documented in their safety management system. Under this framework, a risk management approach should be applied in each stage of an asset's lifecycle from development of the concept or need, through to and including its design, construction, procurement, commissioning, operation, maintenance and decommissioning phases.

It is a legislative requirement that the safety management system include an

asset management policy and processes that address all phases of the asset lifecycle of the rail infrastructure or rolling stock operations.

The intent of this approach to asset management is to minimise the risks related to equipment failure and the impact on the surrounding operations both now and into the future. For example, the provision of detailed information on known risks will assist designers to design out potential problems and provide opportunities to improve safety during the life of the asset.

An effective configuration management system, as part of the safety management system, will assist in tracking any changes made to the asset (both functional and physical) during its lifecycle and ensure the correct operating context is considered during design, manufacture, commissioning and operation.

The asset management policy and processes should provide detail of the principles and means by which the organisation will enact the management of its assets, the configuration management requirements for its assets to ensure continuity throughout the various life stages, and the organisation's responsibilities and accountabilities associated with the management of its assets.

It is important for a rail transport operator to document what assets are used to deliver the railway operations (either owned or leased), what the asset is expected to do, and under what operating conditions. The asset management processes should use a risk-based approach to understand the relationship of how an asset can fail, what causes the failure, what happens when the failure occurs, what the probability of that failure is, and the consequences of each failure.

Asset management processes should clearly indicate:

- accountability and lines of authority (see also section 2.5 Governance and Internal Control Arrangements and 2.6 Management, Responsibilities, Accountabilities and Authorities);
- defined serviceability and safety standards (see section 2.20 General Engineering and Operational Systems Safety Requirements); and
- controlled processes (see section 2.21 Process Control).

RSNL s46

Not all failures can be predicted, but the practice of identifying asset related risk as part of the design and acquisition process, and the close monitoring of asset performance, can provide data on emerging trends and assist rail transport operators to identify new risks and better manage safety. For example, if a rail transport operator detects an increase in a type of failure, then they are in a better position to deal with the failures and mitigate the risks. This relates back to the requirement in the legislation for a rail transport operator to be able to demonstrate that risks have been eliminated or minimised so far as is reasonably practicable.

It is important that there is clear accountability for asset related risks, up to and including the CEO, including processes to capture and report risk related data to support a strategic approach to managing asset safety. There should be clear and allocated engineering authority over standards, procedures, engineering waivers and deviations and the management of asset

configuration data. The competencies for these roles should be considered to ensure that only persons deemed competent by the rail transport operator have the authority to exercise judgment and to make decisions and thus accept risk on behalf of the rail transport operator.

With a clear understanding of how the asset can be managed (and the relationship between cost, risk and performance), the rail transport operator can allocate resources throughout the asset lifecycle. This includes identifying and allocating the required competencies amongst staff and contractors involved in the lifecycle of the asset.

Further guidance on asset management is available through the ISO 55000 Asset Management suite of standards, the IEC dependability range of standards and ISO 31000:2009.

## 2.23 Safety interface coordination

The purpose of the interface coordination provisions of the RSNL is to ensure rail transport operators identify risks to safety arising from each other's railway operations, and that rail infrastructure managers and road managers identify risks to safety arising from rail or road crossings, that these parties determine measures to manage those risks, so far as is reasonably practicable, and they seek to enter into interface agreements to manage the risks.

RSNL Subdivision 2, Division 6 of Part 3

The safety management system must include procedures for:

Regulations Schedule 1 Clause 22

- the identification of interface risks to the safety of railway operations;
- the development and implementation of interface agreements to manage the interface risks identified; and
- monitoring the implementation and effectiveness of and compliance with interface agreements.

### *2.23.1 What is a rail or road crossing?*

A rail or road crossing includes a railway crossing, a bridge carrying a road over a railway and a bridge carrying a railway over a road.

RSNL s 4

An interface agreement will need to be sought between a rail infrastructure manager/s and road manager/s for the following types of rail or road crossings:

- level crossings
- pedestrian and shared path level crossings
- pedestrian and shared path overbridges
- pedestrian and shared path underpasses
- road over rail bridges
- road under rail tunnels
- rail over road bridges
- rail under road tunnels

It may also be appropriate to enter into interface agreements where railway tracks, on which rolling stock moves, are alongside road vehicles on the road.

### *2.23.2 When railway operations interact*

Rail transport operators also interact with eachother. For example, there may

be many operators using the same station or intersecting railway lines. A rail transport operator must therefore: RSNL s106

- identify and assess, so far as is reasonably practicable, risks to safety that may arise from railway operations carried out by or on behalf of the operator because of, or partly because of, railway operations carried out by or on behalf of any other rail transport operator; and
- determine measures to manage, so far as is reasonably practicable, those risks; and
- for the purpose of managing those risks—seek to enter into an interface agreement with the other rail transport operator or rail transport operators.

### *2.23.3 Responsible parties*

Interfaces may be formed between rail transport operators (including rolling stock operators), and between rail infrastructure managers and managers of public roads. In any agreement each party has a responsibility to identify and assess risks to safety at the interface, measures to manage these risks and seek to enter into an interface agreement with other relevant parties. RSNL s109

### *2.23.4 Requirements of an interface agreement*

An interface agreement is a written agreement for managing risks in relation to interfaces between rail transport operators and for rail or road crossings. As a minimum an interface agreement must include provisions for: RSNL s105

- implementing and maintaining control measures that are to be used to manage safety risks associated with the interface, and providing for the evaluation, testing and, if necessary, revision of those control measures;
- the respective roles and responsibilities of each party to the agreement in relation to each control measure;
- the procedures by which each party will monitor and determine whether the other party complies with its obligations under the agreement;
- the exchange of information between the parties in relation to their obligations under the agreement; and
- the triggers for, and the frequency of, reviews of the agreement, and if necessary, the revision of the agreement.

An interface agreement may be formed between two or more rail transport operators, or by one or more rail infrastructure managers and one or more road managers. The agreement itself may consist of two or more documents. RSNL s105

### *2.23.5 Developing an interface agreement*

To develop an interface agreement, the following steps are recommended:

1. Identify the interfaces and relevant road manager /rail infrastructure manager/ rail transport operator (noting there is no limit on the number of parties to an agreement)
2. Identify any interfaces (including bridges and pedestrian and shared path crossings) that can be eliminated
3. Undertake a risk management process of the risks to safety in relation to railway operations at the interfaces (note that the choice of methodologies and approaches to risk management is at the discretion of the parties who share the interface). Certain risks would have already been identified by the individual operators, and new risks may also be identified.

4. Identify any additional controls to manage identified risks relating to rail or road crossings, so far as is reasonably practicable:
   - identify who is responsible for implementing the controls and maintenance schedules
   - identify timeframes for implementing the controls
   - record this information as the *identification, assessment and management of risk*.
5. Identify ongoing risk management review processes, including communication protocols
6. Sign the interface agreement and record in each parties register of interface agreements.

### *2.23.6 Scope of the agreement*

The names, identifications number and locations of interfaces should be recorded along with a description of the infrastructure comprising the crossing and componentry owner.

This infrastructure may include any road control device for level rail or road crossing risk management, such as, CCTV and Active Advance Warning Systems.

Details of the surrounding physical environment in which the crossing is located, should be recorded if it is likely to have an impact on identified risks at the crossing.

Relevant diagrams, photographs, engineering standards and technical or engineering drawings should be attached to the agreement.

### *2.23.7 Identification, assessment and management of risks*

Rail transport operators, rail infrastructure managers and/or responsible road managers using an agreed risk management process must identify, assess and manage risks relating to interfaces, so far as is reasonably practicable. As part of this process: RSNL s109

- risks to safety which may arise at an interface must be identified
- a risk assessment must be conducted
- existing and required measures to manage risks (risk controls) so far as is reasonably practicable must be identified
- the party responsible for implementing or maintaining risk controls must be identified
- the timeframe for implementing risk controls established.

A rail transport operator, rail infrastructure manager and/or responsible road manager who is required to identify and assess risks to safety relating to an interface may do so by:

- itself identifying and assessing those risks
- identifying and assessing those risks jointly with the other party
- adopting the identification and assessment of those risks carried out by the other party.

Risks that may occur over the life cycle of interfaces and those that may occur due to changes in the use of the crossing should be identified. These may be associated with:

- installation of a new interface
- maintenance of an existing interface
- providing new controls at an existing interface
- closure of an interface.

Changes in the use or application of the infrastructure which should be considered include:

- changes in rail speed, usage or any other change to rail traffic, including type and /or volume of rail traffic
- changes in rail infrastructure
- changes in road speed, usage or any other change to road traffic including type and/or volume of road traffic
- changes in pedestrian activity using the crossing
- changes in road infrastructure
- degraded operations.

New risk controls may be identified as necessary, through the process of identifying and assessing safety risks. Where these risk controls cannot be immediately implemented, a timetable for their implementation should be agreed between the parties involved and recorded. It may be appropriate to use a combination of controls to manage risk.

### *2.23.8 Monitoring and review of risk*

If changes are identified through monitoring and review of risk, the agreement should be revised to reflect the changes.

In addition, rail transport operators should ensure that the changes are reflected in their risk register and their safety management system more broadly.

### *2.23.9 Standards and compliance*

The rail transport operator/s, rail infrastructure manager/s, and/or responsible road manager should agree on the standards applicable to safety for the risk assessments, risk management and inspections for interfaces and describe these in the agreement.

It's expected that each party will report to the other party at such times the parties may agree, on its progress in implementing agreed safety risk management measures for which it is responsible under this agreement.

As a way of monitoring compliance, parties may agree to allow other parties to undertake independent audit of their records of compliance with this agreement. The expectations and arrangements for this (such as notification and costs) should be agreed in the interface agreement.

RSNL s(99)(3)

### *2.23.10 Communications and meetings*

Rail transport operators are required to consult with any other rail transport operators with whom they have (or will have) an interface agreement when developing or proposing changes to their safety management system. They must provide persons consulted with a reasonable opportunity to provide comment and provide advice on the outcome in a timely manner. Rail transport operators who are also rail infrastructure managers with interface agreements with road managers should also consult with road managers when developing or proposing changes to their safety management system.

It is expected that each party will report to the other party at such times the parties may agree, to review the provisions of the agreement and the adequacy of safety risk identification, assessment and management concerning the assets listed in the agreement.

Details of the parties' representatives, for the purposes of the interface agreement and emergency contact details should be recorded in the agreement. Position names may be recorded, rather than the names of persons. Parties should ensure that these details are kept up to date.

### *2.23.11 Dispute resolution*

A dispute resolution process should also be discussed and agreed as part of the interface agreement, including the conditions for initiating the process.

### *2.23.12 What happens if a party refuses to enter into an interface agreement?*

Legislation cannot force parties to reach agreement, but it can require parties to try, and can provide alternative means of setting the contents of interface agreements in circumstances where parties cannot reach agreement. In this case, the legislation provides for either party to request that the NRSR take action to address a situation where it is satisfied that a rail transport operator, rail infrastructure manager or road manager:

RSNL s110

- is unreasonably refusing or failing to enter into an interface agreement with another person as required (under Subdivision 2, Division 6 of Part 3 of the RSNL); or
- is unreasonably delaying the negotiation of such an agreement.

The NRSR has the power to determine the arrangements at the road or rail crossing to which the interface agreement applies. This would happen if the NRSR has sent a notice to the relevant party warning of their power to determine the arrangements and giving them an opportunity to enter into an agreement by a specified date, failing which a determination may be made.

### *2.23.13 Register of interface agreements*

Under the RSNL, rail transport operators and road managers are required to keep a register of their interface agreements and determinations by the NRSR given to them.

RSNL s111

## 2.24 Management of notifiable occurrences

The safety management system must include systems and procedures for:

Regulations Schedule 1 Clause 23

- the reporting of notifiable occurrences to the NRSR, within the time and manner required in the legislation, and including all the information required by the NRSR;
- the management of the scene of a notifiable occurrence and for the preservation of evidence where reasonably practicable; and
- the management of all notifiable occurrences, including procedures to enable the determination of which notifiable occurrences are to be investigated and how investigations are to be conducted.

Supporting systems and procedures to ensure staff are appropriately trained and competent to deal with a notifiable occurrence are also fundamental.

The management of notifiable occurrences is also closely related to emergency management planning, which may be triggered for an emergency which is also a notifiable occurrence. For this reason, the two processes should be aligned. For instance, the procedures for the management of personnel at the scene of an incident in an emergency situation and responsibilities for notifying the NRSR may overlap. More guidance on the requirements for emergency management is provided in section 2.27.

### *2.24.1 Reporting of notifiable occurrences*

Notifiable occurrences that happen on, or in relation to the rail transport operator's railway premises or railway operations, must be reported to the NRSR. The NRSR works with the Australian Transport Safety Bureau (ATSB) on the reporting of notifiable occurrences in the rail industry.

RSNL s121

Notifiable occurrences are classified as either Category A or Category B. Category A notifiable occurrences must be verbally reported immediately, as soon as the rail transport operator becomes aware of the occurrence. This verbal report must be made to the ATSB. A written report of the occurrence must then be provided to the NRSR within 72 hours of the rail transport operator becoming aware of the occurrence.

Regulation 57(2)

It is not expected that the rail transport operator will know more than the basic details of an incident when making a verbal report but the ONRSR will generally expect to be advised of:

- The name and contact details of the person making the report
- The role of the person making the report
- The location where the incident occurred
- The day and local time when the incident occurred
- If any passengers have died or been seriously injured as a result of the incident, and how many
- If any crew members have died or been seriously injured as a result of the incident, and how many
- If any other persons have died or been seriously injured as a result of the incident, and how many
- The nature of the incident, including a brief description
- Details of the rail vehicle/s involved including train number/s; and
- The name of the railway operator/s of the rail vehicle/s
- The contact details of the railway operator/s or the rail vehicle/s

However the verbal report should not be delayed by the absence of any of this information and it is preferable that a verbal report is made sooner rather than later. As more information comes to hand it is up to the rail transport operator to notify the NRSR as appropriate or as requested by the NRSR. More detail and/or corrections should also be included in the written report and/or following a subsequent investigation report. For example, where a serious personal injury was initially reported and the person has since died within 30 days of the incident, this should be recorded by the rail transport operator and advised to the NRSR as appropriate.

In the case of Category B notifiable occurrences, a rail transport operator does not need to verbally report these; rather a written report must be provided to the NRSR within 72 hours of the rail transport operator becoming aware of the occurrence. Regulation 57(3)

The rail transport operator must ensure that any report it makes of a notifiable occurrence is in the form and manner, and contains all the information, required by the NRSR. Regulation 57(4)(5)(6)

Two or more rail transport operators may make a joint report with respect to a notifiable occurrence affecting them. Rail transport operators should contact the ONRSR for guidance on this. It is recommended that each rail transport operator make their own verbal notification of a Category A occurrence to the ATSB. RSNL s121

Category A and B occurrences are defined in the National Regulations.

The NRSR may impose additional notification requirements for other occurrences or types of occurrence that endangers or could endanger the safety of any railway operations. Such additional reporting requirements would also be notified to the rail transport operator in writing. RSNL s121(3)

### *2.24.2 Investigation of notifiable occurrences*

The NRSR may by written notice, require a rail transport operator to investigate notifiable occurrences, or any other occurrences that have endangered or that may endanger the safety of railway operations carried out by the rail transport operator. RSNL s122

The level of investigation must be determined by the severity and potential consequences of the notifiable occurrence as well as other similar occurrences and its focus should be to determine the cause and contributing factors, rather than to apportion blame.

The rail transport operator must ensure that the investigation is conducted in a manner approved by the NRSR and within a period specified by the NRSR. A rail transport operator who has carried out an investigation under this section must report to the NRSR on the investigation within a period specified by the NRSR.

The safety management system should identify matters for investigation more broadly than simply responding of any instruction from the NRSR to conduct an investigation of that occurrence or type of occurrence (see also section 2.18 Human Factors).

Requirements for systems and procedures for the management of the scene of a notifiable occurrence and the preservation of evidence are provided by section 2.27 Emergency Management. Further guidance about the conduct of rail safety investigations can be found in AS4292.7: 2006 ‘Railway Safety Investigation and the Code of Practice for Rail Safety Investigations’.

## 2.25 Rail safety worker competence

Effective rail safety management is dependent on a skilled and competent workforce. In an organisation with strong links between its competency and

risk management frameworks, rail safety workers have the skills, knowledge and experience to undertake their work safely; contributing to a positive safety culture and effective safety management system.

As part of their safety management system, rail transport operators must include procedures and where necessary, standards, to ensure that each rail safety worker who is to carry out rail safety work in relation to the rail transport operator's accredited railway operations has the competence to carry out that work.

RSNL s117

Regulations Schedule 1 Clause 24

### *2.25.1 Who is a rail safety worker?*

A rail safety worker is defined in the RSNL as an individual who has carried out, is carrying out, or is about to carry out, rail safety work. *Rail safety work* is any of the following:

RSNL s8

- driving or despatching rolling stock or any other activity which is capable of controlling or affecting the movement of rolling stock;
- signalling (and signalling operations), receiving or relaying communications or any other activity which is capable of controlling or affecting the movement of rolling stock;
- coupling or uncoupling rolling stock;
- maintaining, repairing, modifying, monitoring, inspecting or testing—
  - rolling stock, including checking that the rolling stock is working properly before being used; or
  - rail infrastructure;
- installation of components in relation to rolling stock;
- work on or about rail infrastructure relating to the design, construction, repair, modification, maintenance, monitoring, upgrading, inspection or testing of the rail infrastructure or associated works or equipment, including checking that the rail infrastructure is working properly before being used;
- installation or maintenance of—
  - a telecommunications system relating to rail infrastructure or used in connection with rail infrastructure; or
  - the means of supplying electricity directly to rail infrastructure, any rolling stock using rail infrastructure or a telecommunications system;
- work involving certification as to the safety of rail infrastructure or rolling stock or any part or component of rail infrastructure or rolling stock;
- work involving the decommissioning of rail infrastructure or rolling stock or any part or component of rail infrastructure or rolling stock;
- work involving the development, management or monitoring of safe working systems for railways;
- work involving the management or monitoring of passenger safety on, in or at any railway.

As with a risk management approach the risks of different types of rail safety work should be prioritised and minimised. Ensuring rail safety workers are competent so far as is reasonably practicable is part of this process.

For guidance on the responsibilities of rail transport operators in outsourcing arrangements, refer to the *ONRSR Guideline: Effective Management and Control.*

### *2.25.2 Responsibilities of a Rail Transport Operator to ensure competency*

Under section 117 of the RSNL, a rail transport operator must ensure that each rail safety worker who is to carry out rail safety work in relation to railway operations in respect of which the operator is required to be accredited has the competence to carry out that work.

RSNL s117

It is the responsibility of rail transport operators to identify rail safety workers in their organisation and the competencies required to undertake their work safely, and implement these as reasonably practicable. The RSNL prescribes certain requirements for competency that rail transport operators must demonstrate, including that:

- rail safety workers have the knowledge and skills required to do their work safely
- rail safety workers have been trained in accordance with the appropriate AQTF and AQF
- records of training have been retained
- a rail safety worker's qualifications can be checked
- there is periodic re-assessment of rail safety workers

Regulation 30

**Fit with knowledge and skills required by the rail safety worker**

RSNL s117(2)(b)

Rail transport operators must identify and address the specific competencies required for the task, including use of their specific equipment or other operational requirements, and the training and qualification required to achieve these competencies. In other words, a rail safety worker with an AQF qualification should not necessarily be regarded as competent by the rail transport operator and will not necessarily be considered competent by the NRSR (ie if the task requires other skills or knowledge that are not covered by the qualification or any additional qualifications).

As the first step in the assessment process, the competencies required by a rail safety worker should be identified by a rail transport operator through a task analysis and risk assessment, ie what is required of a task, the risks of the task, and what competencies are required to minimise these risks.

**Use of the AQTF and AQF**

Once a rail transport operator has identified the required competencies, these competencies must be assessed in accordance with the Australian Quality Training Framework (AQTF) and any units of competency recognised under the Australian Qualifications Framework (AQF), as is reasonably practicable.

RSNL s117(2)(a)

Compliance with the requirement to use the AQTF means that training is delivered by a Registered Training Organisation, whereas the AQF provides the qualification itself (eg diploma, certificate or Bachelor's degree).

Training delivered under the AQTF and qualifications gained under the AQF are nationally recognised and demonstrate a certain level of competency.

The rail transport operator should be able to demonstrate a process for identifying and assessing the suitability of AQTF and AQF options, with regard to their training and qualification needs. A registered training organisation may assist in this process but the rail transport operator is responsible for this assessment, and fit with the needs of their safety

management system. As part of this assessment, rail transport operators should also consider any additional training or competencies that may be required to complement use of the AQTF and/or AQF.

Unless it is not reasonably practicable to do so, rail transport operators are required to use the training and qualifications provided under the AQTF and AQF to assess the competency of rail safety workers. RSNL s117(4)

The Transport and Logistics Industry Skills Council can provide advice to rail transport operators on what training and qualifications may be suitable for their type of railway operations. Rail transport operators should also seek advice from their Registered Training Organisation on training and assessment options.

Further guidance on the AQTF and AQF is also available via www.asqa.gov.au.

**Keeping records**

It is a condition of accreditation that rail transport operators document each stage of a risk assessment and maintain records of competence. A documented task analysis and risk assessment process should demonstrate that a rail transport operator has assessed the competencies required for the task and options under the AQTF and AQF (see also section 2.17 Risk Management) and provide the rationale for the chosen training and qualifications option. RSNL s100(2) RSNL s117(6)

The records of training and qualifications attained by a rail safety worker must also be maintained as evidence of that competence, including details of all of the following: Regulation 30

- the rail safety training undertaken by each rail safety worker, including when, and for how long the training was undertaken;
- the qualifications of each rail safety worker, including if applicable:
  - the units of competence undertaken to achieve the qualification;
  - the level of qualification attained;
  - if and when a reassessment of competence is to be conducted;
  - if and when re-training is due; and
  - the date any re-training was undertaken.
- the name of the organisation conducting the training or retraining; and
- the name and qualifications of the person who assessed the competence of the rail safety worker.

A certificate purporting to have been issued under the AQF to a rail safety worker certifying that the worker has certain qualifications or units of competence is evidence that the worker has those qualification or units of competence. RSNL s117(3)

A rail transport operator may also wish to include in its contract documentation, arrangements with contractors for the regular provision of information about the competence of rail safety workers carrying out rail safety work on or in relation to the rail transport operator's rail infrastructure or rolling stock, to ensure that adequate records are maintained.

**Ensuring a rail safety worker's qualifications can be checked** RSNL s118

The safety management system must include procedures to ensure that rail safety workers have a form of identification that is sufficient to enable the type of competence and training of the rail safety worker to be checked by a rail safety officer. A rail safety worker must produce the identification at the request of a rail safety officer.

This doesn't mean that an identity card must list each qualification that a rail safety worker has, rather, a rail safety officer can use the card to verify the competencies of that worker. For example, a rail safety officer checking a rail safety worker's competence should be able to verify the identification belongs to that worker, that worker's name and can contact a nominated person that can provide the details of that worker's skills and qualifications. In this way, the rail transport operator should ensure there are clear processes for maintaining and accessing competency records, and that the card has enough information for a rail safety worker to check these records quickly and easily.

Any person may issue identification for rail safety workers. However, if it is issued by someone other than the rail transport operator (eg a contractor or an RTO) then the rail transport operator will need to have in place systems to ensure that the identification is sufficient to enable a rail safety officer to check the type of competence and training of the relevant rail safety workers. Regulations Schedule 1 Clause 24

**Periodic re-assessment**

The safety management system should include procedures for monitoring, reviewing and revising the adequacy of rail safety worker competence.

Regular assessment of competency needs and the procedures for identifying and managing these should form part of the rail transport operator's periodic review of its safety management system (see also section 2.9 Review of the safety management system).

Rail transport operators should remain aware of new or changed training and qualifications available under the AQTF and AQF, and identification of this may form part of this review.

### *2.25.3 Identifying, assessing and implementing competency requirements*

An appropriate process for the management of rail safety worker competence should be risk-based. Steps that a rail transport operator may take include:

1) Identify the required competencies of the work - this involves breaking down the work required into a series of detailed sub-tasks to identify the technical and non-technical knowledge and skills needed to undertake the work. The focus should be on tasks, not formal job classifications because the rail safety workers are often required to be multi-skilled and to perform various tasks within one job and not all work is considered 'rail safety work'.

   As part of this process, the risks identified for the task should be identified and the competencies required should be linked to those risks.

At the end of this step, the rail transport operator should be able to articulate the skills, knowledge, experience and qualifications required for a person to undertake that rail safety work safely.

Tasks not identified as rail safety worker tasks do not require the person undertaking them to demonstrate competence as it is required in the RSNL, however rail transport operators should seek their own advice if this is required by any other legislation. Such tasks should be risk assessed and relevant training and supervision provided to ensure they are undertaken safely.

A worker may undertake both rail safety work and other work. In this case they would need to be competent to and have identification to undertake the rail safety worker tasks, and may only require training and/or supervision for the other tasks.

2) Assess training and qualification options under the AQTF and AQF - rail transport operators should develop and implement a process for determining the AQF units of competency and qualifications that are applicable to the rail safety work, in context with the rail transport operator's own railway operations, and how these are delivered under the AQTF.

   Operators using generic AQF units of competency may need to modify them or include additional competencies to ensure the final competence standards are relevant to their working environment and context. These should be validated against the competence requirements identified for the task prior to use. This is to ensure suitability to the specific working environment /context.

   At the end of this step, the rail transport operator should have identified and assessed the suitability of training and assessment options under the AQTF and qualifications under the AQF, in context of the specific competencies required for the rail safety work identified in step one.

3) Establish a competency training and assessment implementation plan - the previous steps will enable a task-competencies matrix to be developed and facilitate the establishment of a 'rail safety worker competence training and assessment implementation plan' for the railway operations.

   The 'rail safety worker competence training and assessment implementation plan' should enable the rail transport operator to identify which rail safety workers possess the required competencies, where 'recognition of prior learning' can be applied and where 'gap' training will be required. It is an invaluable tool for ensuring the competence of rail safety workers complies with the requirements of the RSNL.

   A 'rail safety worker competence training and assessment implementation plan' together with the competence standards and procedures should be incorporated into the safety management system.

   At the end of this step, the rail transport operator should be able to identify rail safety workers that have sufficient prior experience/ training/ qualification and those that need training or qualifications to undertake

their rail safety work safely.

4) Source training providers and accredited assessors – unless it is not reasonably practicable to do so and the NRSR is satisfied with alternative arrangements, rail transport operators must use training providers and qualifications under the AQTF and AQF.

   Local tertiary education providers are registered training organisations with the necessary skills and capacity to work with operators to develop the most appropriate processes to meet the training and assessment needs of their rail safety workers.

   Smaller rail transport operators or those in remote locations may find it useful to form partnerships with other operators in their area who have adopted AQF units of competence and formed relationships with registered training organisations. Such partnerships provide an opportunity to share the costs of training and assessments, as well as providing a vehicle for the exchange of information and relationship building among operators and contractors.

   Operators forming partnerships with external providers must ensure that assessments of competency are conducted by an accredited assessor with the appropriate scope of registration for the units of competence being assessed.

   At the end of this step, the rail transport operator should have advice from a Registered Training Organisation on their training and assessment needs and the options under the AQF.

5) Undertake training and assessment - this is an iterative process that involves:

   - identifying or applying triggers that initiate the competence assessment process, for example: recruitment, introduction of new technology or new plant or equipment, changes to the safety management system, review of risk assessments, an extended period of leave or alternative duties since doing the tasks, or elapse of a set period of time, or a change in the AQF qualifications.
   - identifying the rail safety worker's existing training and competence levels to ascertain where 'Recognition of Prior Learning' or 'Recognition of Current Competency' can be applied;
   - assessing this against the rail safety work competence requirements to ensure the employee is competent to undertake the planned rail safety work;
   - identifying any gaps in the rail safety worker's training or competence levels;
   - providing training to address competence gaps;
   - establishing a schedule for the continuation of training and assessment;
   - updating competency records for that rail safety worker and ensuring the rail safety worker has appropriate identification.

   This is in addition to training and instruction requirements for keeping rail safety workers informed and involved on the organisation's safety

management system and work practices, procedures, policies and standards, specified hazards and relevant control measures (see section 2.16 Training and Instruction).

### *2.25.4 Demonstrating alternative methods of competency*

RSNL s118

The RSNL provides for situations where it is not reasonably practicable for a rail transport operator to assess the competence of a rail safety worker in accordance with the AQTF and AQF. The NRSR will consider these on a case basis but the reasons may include any or all of the following:

- Unavailability of appropriate registered training organisation or unit of competency (for example, qualifications for a unique piece of equipment)
- Cost is prohibitive
- Geographic distance
- Restricted workforce (ie not able to send workers away)

RSNL s117(2)(a)

It may be reasonably practicable to comply with one aspect of the requirement to assess competence in accordance with the AQTF and the AQF. For instance, it may be reasonably practicably for an operator to assess the competency of their rail safety workers against the AQF, but not reasonably practicable to employ registered training organisation to train and assess them (for one or more of the reasons above). In this instance, the operator may decide to employ a person with a Certificate IV qualification to undertake the training and assessment of the identified AQF units of competency (see 2.25.5 for more information on enterprise attainment).

The *ONRSR Policy: Application of AQTF and AQF to Rail Safety Worker Competency Assessment* describes the regulatory requirements in more detail for rail transport operators intending to use this clause.

RSNL s117 (4)(b)

Where an operator presents a case to not use the AQTF and/or AQF competencies or qualifications the operator must satisfy the NRSR that the rail safety worker has otherwise acquired the necessary qualifications and competencies applicable to their duties and that they have the knowledge and skills to carry out their duties safely.

In making the decision to be satisfied the NRSR will consider whether:

- the rail transport operator's approach to assessing competency is appropriate having regard to the scale, nature and risk profile of their operation;
  - the rail transport operator recognises its responsibility to ensure that the rail safety worker has the competence to carry out assigned rail safety work; and
  - the rail transport operator's approach to assessing the competency of rail safety worker does not compromise safety, i.e. that it ensures the elimination or minimisation of risks to the railway operations, so far as is reasonably practical.

The NRSR will also consider whether the approach taken by the rail transport operator is consistent with the principles of competency based training and assessment, in that:

- competencies required for the rail safety worker to safely carry out their duties have been established, these should be expressed in a similar manner to competencies established under the AQF in that a competency statement should set out, in writing;
- the skills and knowledge a person is required to have to operate effectively in order to achieve the intended outcome of work;
- how this would be assessed, for example by one or a combination of written examination, observation on the job, practical exercise or simulation;
- the range of circumstances in which the skills and knowledge would have to be demonstrated; and
- the types of evidence needed to ensure that performance is consistent and can be sustained
- any similar AQF based competency has been considered in terms of adopting appropriate assessment criteria;
- the content and persons delivering the training (including on the job and off the job training where appropriate) are appropriate i.e. it would be expected that persons delivering the training would, as a minimum, hold current competence in the training being delivered;
- suitable and qualified persons, being independent from those providing the training, are engaged to assess the competence of the rail safety worker;
- persons performing assessments of competency hold, as a minimum, a Certificate IV in Training and Assessment or equivalent; and
- the assessor is familiar with the work to be undertaken by the rail safety worker and the associated risks.

The rail transport operator's alternative assessment of competency procedures will need to be fully documented. This documentation will be examined by the NRSR along with any records of assessment that have been undertaken, in determining whether the NRSR is satisfied with the approach.

### *2.25.5 In-house training and qualifications (enterprise attainment)*

An alternative method of 'internal' competency assessment is commonly referred to as *enterprise attainment*. Using this methodology a rail transport operator effectively replicates the training or qualification provided by the AQTF and AQF and delivers this in-house, where it is not reasonably practicable to use the AQTF and AQF in full.

In this way the organisation may customise the training and qualification to their needs to form enterprise-specific qualifications. This may also complement an AQF qualification where, for example, a person has an electrical engineering degree but requires an enterprise-specific unit of competency to work on a unique piece of infrastructure.

The benefit of this approach is that it is tailored to the organisation's specific needs. However such a qualification would not be recognised under the AQF

and is not transferrable outside of the organisation.

In proposing to use this methodology the rail transport operator must meet the requirements set out in the *ONRSR Policy: Application of AQTF and AQF to Rail Safety Worker Competency Assessment* and described in section 2.25.4 above.

***Case study: Perisher Blue Pty Ltd – Developing worker competency***
Perisher Blue Pty Ltd (Perisher) owns and operates the Perisher Ski Resort, including the Skitube Alpine Railway (Skitube), an isolated rack-drive railway comprising 8.5 kilometres of single track through the Kosciusko National Park in NSW.

Perisher has 17 permanently employed rail safety workers and employs up to 23 additional seasonal rail safety workers during winter (its peak season). Perisher's rail safety roles include train drivers, duty controllers, rail electricians (high/low voltage and signalling), track inspectors, railway fitters and the management team which provides oversight of safe working. Perisher also engages contractors for specialist rail safety work (such as servicing certain high voltage reticulation infrastructure).

Perisher provides a leading example of risk-based competency management, tailored to the specific needs of its railway operations and the types of rail safety work carried out.

Perisher began by reviewing the legislative requirements and its notice of accreditation and worked with its staff through a process of task analysis to identify the rail safety work carried out. On review of its risk register, Perisher was able to identify where competence was identified as a risk control and involved its partner registered training organisation to collaboratively determine the units of competence required to deploy those risk controls.

This collaborative approach allowed Perisher to identify and assess the relevant training and qualification requirements, including identifying units of competence from the Transport Logistics Industry's TLI10 and the EE-Oz UET09 training packages from the Australian Qualifications Framework (AQF).

By cross-referencing this with the hazards and risk controls within its risk register, Perisher was able to identify tasks that were not adequately covered by units of competence from the AQF. These deficiencies were addressed through further collaboration with relevant subject matter experts (SME) to develop 'Perisher' units of competence allowing competency based limits of authority to be set and the hazards to be managed for those tasks not covered by the AQF. The enterprise attainment competence training and assessment framework Perisher has developed closely follows the AQTF model.

The outcome is that certain types of rail safety work have a mixture of AQF/enterprise competency attainments, while other types only have AQF attainments.

Perisher's risk register was key to the completion of all of the work and the material developed detailing its approach to managing competency as a key risk control is captured within Perisher's safety management system.

As part of its ongoing assessment of competence, Perisher conducts induction, seasonal staff training and permanent staff refresher training in preparation for each winter season. In addition all contractors must be able to demonstrate they are competent to carry out tasks.

By taking a proactive approach to ensuring the competence of its rail safety workers, Perisher has been able to achieve a strong safety culture which supports its business objectives and protects its reputation for providing safe and comfortable facilities for guests and workers.

Some of the keys to Perisher's success include:

- Open communication and collaboration within all levels of the team, including workers, managers, trainers/assessors, SME and its partner registered training organisation.
- A structured and proactive risk-based process to developing and implementing a competency management system that suited its specific risks and operational needs.
- Practical use of its risk register to share operational hazard management information across the company, with contractors and with SME during the review and framework development process.
- Strong safety leadership, including consistent communications, effective mentoring and training and support to the system developers and to those responsible for complying with the requirements.

(Based on the original interview with the Independent Transport Safety Regulator, 2012, and reproduced with the permission of Perisher Blue Pty Ltd)

## 2.26 Security management

The safety management system must include:

Regulations Schedule 1 Clause 25

RSNL s112

- a security management plan that includes measures to protect people from theft, assault, sabotage, terrorism and other criminal acts of other parties and from other harm; and
- systems and procedures to ensure that the appropriate response measures of the security plan are implemented without delay if such a security incident occurs.

### *2.26.1 The security management plan*

The security management plan must include all of the following:

Regulation18

- a list of the risks arising from theft, assault, sabotage, terrorism, and other criminal acts or other sources of harm;
- a description of the preventative and response measures to be used to manage those risks, including a description of the policies, procedures and equipment and other physical resources that it is proposed to use for those measures, and of the training that it is proposed to be provided;
- if the rail transport operator shares a location, such as a model interchange or a port with one or more other transport operators, a description of the arrangements made with those other transport operators in relation to that location to prevent or respond to security incidents;
- procedures for the recording, reporting and analysis of security incidents;

- the allocation of security roles and responsibilities to appropriate people;
- provision for liaison, the sharing of information and for joint operations with emergency services and with other transport operators who may be affected by the implementation of the plan; and
- provision for the evaluation, testing and if necessary, the revision, of security measures and procedures.

Legislation other than the RSNL may impact on some rail transport operator's security management obligations. For further information rail transport operators should contact the government authority responsible for regulation of transport services in their jurisdiction.

## 2.27 Emergency management

The RSNL does not define "emergency" and requires the rail transport operator preparing an emergency management plan to identify the types or classes of foreseeable emergency. The RISSB National Guideline on Rail Emergency Management Planning defines an emergency as "any event when loss of life, property and/or/damage to the environment occur or are imminent requiring the immediate deployment and coordination of additional resources which are beyond the affected rail transport operator's capabilities[2]".

Rail emergencies are more complex and have more serious consequences than incidents. They would usually require a multi-agency response and often a designated Control Agency provides overall coordination at the emergency site (generally by emergency services)[2].

The intent of an emergency management plan is to prepare for failure and provide clear guidance to personnel to minimise the consequences of an emergency. The safety management system must include an emergency management plan and systems and procedures to ensure that the plan is implemented if an emergency occurs.

Regulations Schedule 1 Clause 26

### *2.27.1 Development of the emergency management plan*

The emergency management plan must be prepared in conjunction with emergency services that would be expected to attend in the event of a significant incident.

RSNL s113(2)

Rail transport operators must comply with consultation requirements before developing the safety management system, or reviewing or amending the system, as discussed in section 2.14. Additional consultation requirements apply to the development of an emergency management plan. When developing the emergency management plan the rail transport operator must also consult with:

Regulation19

- providers of emergency services, for example police, ambulance or fire fighting services;
- any other rail transport operator who may be affected by implementation of the plan;
- those who may be required to assist in the implementation of the plan including:
  - providers of utility services such as water, sewerage, gas,

[2] Source: RISSB (2010) *National Guideline: Rail Emergency Management Planning, v1.01*

electricity or telecommunications, or like services;
- any person who is permitted to own or use a pipeline, or is licensed to construct a pipeline; and
- providers of public transport.

### *2.27.2 The emergency management plan*

The emergency management plan must be comprehensible and address all of the following: Regulation19

- the types or classes of foreseeable emergencies to which it applies, and their consequences, including estimates of the likely magnitude and severity of the effects of the emergency;
- the risks to safety arising from those emergencies;
- methods to mitigate the effects of those emergencies;
- initial response procedures for dealing with those emergencies and the provision of rescue services;
- recovery procedures for the restoration of railway operations and for the assistance of people affected by the occurrence of those emergencies;
- the allocation of emergency management roles and responsibilities within the rail transport operator's organisation and between the operator and other organisations;
- call-out procedures;
- the allocation of personnel for the on-site management of those emergencies;
- procedures for liaison with relevant emergency services, including information about the circumstances in which the emergency service providers are to be immediately
- contacted;
- procedures to ensure that emergency services are provided with all the information that is reasonably required to enable them to respond effectively to an emergency;
- procedures for effective communications and co-operation throughout the emergency response;
- procedures for ensuring site security and the preservation of evidence.

### *2.27.3 Communicating the plan*

The safety management system must have processes to ensure, so far as is reasonably practicable, that all employees and contractors of the rail transport operator who may be required to implement any emergency response procedures in the emergency management plan are: Regulation 20

- provided with information (including by way of briefings and appropriate education programs) about the relevant elements of the plan;
- provided with ready access to the plan at all times;
- able to do anything that may be required of them under the plan.

The emergency plan must also be readily accessible at all times to: RSNL s113 Regulation 20

- any other rail transport operator who may be affected by implementation of the plan;
- providers of emergency services, for example police, ambulance or fire fighting services;
- those who may be required to assist in the implementation of the plan including:

- providers of utility services such as water, sewerage, electricity or telecommunications, or providers of public transport; and
- any person who is permitted to own or use a pipeline, or is licensed to construct a pipeline;
- providers of public transport.

A copy of the plan must also be provided to emergency services.

### *2.27.4 Testing the plan*

The safety management system must have processes to ensure that the emergency management plan, or elements of the plan, are tested, at intervals set out in the plan and after any significant changes are made to the plan, to ensure that the plan remains effective. Regulation 20

The intervals for testing of the plan must be determined in conjunction with the emergency services, if it is reasonably practicable to do so. In house testing must be undertaken as often as necessary to ensure that the plan will be properly implemented should an emergency arise. Regulation 20

Wherever reasonably practicable, the rail transport operator must arrange for the participation of emergency services in the testing of the plan or elements of the plan.

A rail transport operator must ensure that the appropriate response measures of the emergency management plan are implemented if an emergency occurs. RSNL s113

## 2.28 Health and fitness

The safety management system must include a program for the management of health and fitness for rail safety workers. Regulations Schedule 1 Clause 27

The health and fitness program must comply with the requirements of the *National Standard for Health Assessment of Rail Safety Workers*, published by the National Transport Commission, as amended from time to time. RSNL s114

Regulation 27

The *National Standard for Health Assessment of Rail Safety Workers* provides extensive guidance for rail transport operators and is available on the website of the National Transport Commission.

## 2.29 Drugs and alcohol

Without limiting the overarching duty for rail transport operators to ensure, so far as is reasonably practicable, the safety of its railway operations, a rail transport operator's obligations regarding drug and alcohol management are to ensure that rail safety workers do not carry out rail safety work in relation to the operator's railway operations, and are not on duty, while impaired by alcohol or a drug. RSNL s52(1)

RSNL s52(2)(c)

The RSNL defines a drug and includes the substances referred to in the current Poisons Standard provided for by the *Therapeutic Goods Act 1989* (Cth). The Ministerial Council may also declare a substance to be a drug. A drug also includes any substance, other than alcohol, that when consumed or used by a person deprives that person temporarily or permanently of any of his or her normal mental or physical faculties. Regulation 5

Irrespective of any specific requirements regarding drug and alcohol management, the overarching duties apply and rail transport operators must demonstrate compliance with these duties.

RSNL s99(2)(e)

The safety management system for a rail transport operator must include a drug and alcohol management program to manage risks related to the use of drugs or alcohol. A rail transport operator must prepare and implement such a program, in accordance with the requirements set out in Regulation 28 of the National Regulations, for rail safety workers (as defined in the RSNL) who carry out work in relation to the rail transport operator's operations for which they are accredited.

RSNL s115 Regulation 28

Regulation 28 describes a non-exhaustive list of requirements for the drug and alcohol management program, which must include a drug and alcohol testing regime[3]. The drug and alcohol management program must be fully integrated into the safety management system, as required by section 99(2) of the RSNL. Rail transport operators should ensure that the requirements for a safety management system are applied in relation to the drug and alcohol management program (for example, consultation requirements, implementation of controls and supporting mechanisms, documentation requirements, resource requirements, etc.).

RSNL s99

The extent of detail and the degree of risk controls required for the various elements of the drug and alcohol management program will be scalable commensurate with the rail transport operator's assessment of the drug and alcohol-related risks associated with its railway operations. The level of detail and nature of risk controls in a drug and alcohol management program might vary for different workforce groups within an organisation, and among different sized organisations.

When considering drug and alcohol management, rail transport operators should be aware they may have obligations under other pieces of legislation, such as work health and safety laws and industrial relations legislation. Rail transport operators may obtain their own independent legal advice or contact the ONRSR for information if further clarification is required.

### *2.29.1 Drug and alcohol management program requirements*

A rail transport operator's drug and alcohol management program must include the following:

Regulation 28(1)

- a drug and alcohol policy that sets out the objectives of the rail transport operator with respect to drug and alcohol management in the workplace
- systems and procedures for the provision of information and education to rail safety workers in relation to the drug and alcohol management program
- systems and procedures to ensure the confidentiality of personal information obtained from, or in respect of, a rail safety worker in relation to drug or alcohol testing, counselling, treatment or rehabilitation
- details of the drug and alcohol testing regime, including testing procedures and procedures for the management of rail safety workers in

[3] Note that New South Wales has special requirements, see section 2.29.6 below.

respect of the results of such testing.

The drug and alcohol management program of a rail transport operator must also include and provide for the following measures to be taken by (or on behalf of) the operator:

Regulation 28(2)

- the establishment of rules relating to the use of drugs and alcohol by rail safety workers (including prohibitions and restrictions on use)
- the identification of rail safety workers who have drug or alcohol related problems and, where appropriate, referral of those workers to assessment, treatment, counselling or rehabilitation.

To help inform the drug and alcohol management program and to assist in meeting the requirement to provide information to rail safety workers with respect to the effects of drugs and alcohol, rail transport operators may look to the significant amount of research and education material available for road safety, addressing factors such as elimination rates, prevalence of certain drugs, or possible effects and behavioural indicators.

### *2.29.2 Drug and alcohol testing by a rail transport operator*

*NOTE: Rail transport operators with railway operations within New South Wales have different requirements with respect to drug and alcohol testing. Guidance on these requirements is available on the ONRSR website.*

As described above, a drug and alcohol management program must include details of the drug and alcohol testing regime, including testing procedures.

Regulation 28(1)(d)

While testing is an effective deterrent for workers, it also helps a rail transport operator to mitigate the risks to safety from rail safety workers being affected by either drugs or alcohol. To be effective, testing should support other aspects of a rail transport operator's drug and alcohol management program.

The RSNL does not specify how a rail transport operator is to construct a drug and alcohol testing regime or the volume of testing that must be undertaken. Consistent with the principles of the safety management system, operators should follow a risk-based approach in developing their testing regime in consultation with affected rail safety workers. Rail transport operators should develop a regime that is appropriate to their operations; this may take the form of different testing requirements for groups or classes of rail safety workers based on tasks performed or for classes of rail safety worker with respect to the risks presented by differing routes or geographical locations.

The rail transport operator should determine, through a documented risk-based approach, the types of testing and testing procedures that are appropriate to their operations and risk profile. Notwithstanding this advice, rail transport operators should test to an appropriate standard, such as an Australian Standard. Relevant Australian Standards may include AS/NZS 4308:2008 (Procedures for specimen collection and the detection and quantitation of drugs of abuse in urine), AS 4760:2006 (Procedures for specimen collection and the detection and quantitation of drugs in oral fluid) or AS/NZS 3547:1997 (Breach alcohol testing devices for personal use).

As with all aspects of the safety management system, the drug and alcohol

management program and testing regime should be regularly reviewed and continuously improved, taking into account the efficiency of the program, the results obtained from testing and developments in technology and drug and alcohol testing standards. This should ensure that the testing regime, including the volume and types of testing, is adequate, suitable and appropriately targeted to manage the identified risks to safety. An operator's testing program is subject to audit by the NRSR.

Test results should be used for in-house monitoring and treatment (subject to the reporting requirements specified in sections 2.29.4 and 2.29.5) in accordance with the drug and alcohol management program. Reporting the identity of a rail safety worker[4] who may have breached a safety requirement concerning the use of drugs or alcohol is not required under the RSNL (refer to section 2.29.4). RSNL s129

A person authorised by the NRSR (an 'authorised person' as defined in the RSNL) may, on behalf of the NRSR, conduct drug and alcohol testing of rail safety workers in addition to the testing undertaken by the rail transport operator. The results of testing by an authorised person may be used to prosecute a rail safety worker if a breach of the offences in the RSNL has occurred.

Privacy legislation may, in some circumstances, restrict the use of test results. Rail transport operators should obtain their own independent legal advice or contact the ONRSR for information if further clarification is required.

### *2.29.3 Informing rail safety workers of their obligations with respect to the management of drugs and alcohol*

***Rail safety workers' responsibilities and obligations under the rail transport operator's drug and alcohol management program***

The drug and alcohol management program must include and set out the obligations of rail safety workers with respect to the management of drug and alcohol use and the actions that may be taken by the operator if there is a breach of those obligations. This must include: Regulation 28(3)

- a requirement that a rail safety worker notify the operator, or a nominated person, if the worker is aware that the ability of the worker, or another worker, to carry out rail safety work may be impaired by drugs or alcohol;
- the provision of education and rehabilitation measures for rail safety workers, including provision for information to be provided about referral to counselling, treatment and rehabilitation services where appropriate;
- the provision of information to rail safety workers with respect to the effect of drugs and alcohol and the possible disciplinary action and other penalties that may apply if a rail safety worker fails to comply with the drug and alcohol management program;
- appeals and grievance mechanisms for dealing with complaints about the application of disciplinary action and other penalties, or the implementation of the drug and alcohol management program;

[4] Note that there are different requirements in New South Wales.

- protocols for fair procedures relating to the operation of the drug and alcohol management program.

***Rail safety workers' responsibilities and obligations under the RSNL***

The drug and alcohol management program of a rail transport operator must include the provision of information to rail safety workers about their responsibilities and obligations in relation to drug and alcohol use under the RSNL.

Regulation 28(3)

Rail safety workers have various requirements in the RSNL with respect to drug and alcohol use. Amongst others, general requirements include the requirement for rail safety workers to take reasonable care for his or her own safety and take reasonable care that his or her acts or omissions do not adversely affect the safety of other persons. A rail safety worker must also not, when carrying out rail safety work, wilfully or recklessly place the safety of another person on or in the immediate vicinity of rail infrastructure at risk.

RSNL s56

Additionally, the RSNL contains a number of offences for rail safety workers directly in relation to drugs and alcohol; penalties may apply in the event of a breach. A rail safety worker must not carry out, or attempt to carry out, rail safety work –

(a) while there is present in his or her blood any concentration of alcohol; or

(b) while cannabis (delta-9-tetrahydrocannabinol), methamphetamine/'speed' (Methylamphetamine) or MDMA/'ecstasy' (3,4-Methylenedioxymethylamphetamine) is present in his or her oral fluid or blood; or

RSNL s128(5)

(c) while so much under the influence of alcohol or a drug as to be incapable of effectively discharging a function or duty of a rail safety worker (this does not have to be an illegal drug – this could include prescription medication from a doctor).

RSNL s 128(1)(c)

To ensure compliance with the above offences in the RSNL, an authorised person (as defined in the RSNL) may conduct testing of rail safety workers. Rail safety workers should therefore be aware that they may be tested for drugs and alcohol by both the rail transport operator and an authorised person.

RSNL s126
RSNL s127

Testing by an authorised person can occur when the rail safety worker

- is about to carry out rail safety work; or
- is carrying out rail safety work; or
- is attempting to carry out rail safety work; or
- is still on railway premises after carrying out rail safety work; or
- without limiting a preceding paragraph—is involved in a prescribed notifiable occurrence.

The method of testing by an authorised person may differ between states and territories; procedures will be specified in each state and territory's legislation applying the RSNL. For the purposes of making a requirement that a rail safety worker submit to a preliminary breath test, breath analysis, a drug

screening test, oral fluid analysis or blood test, an authorised person may require the worker to provide the worker's name and residential address and give any other reasonable direction to the worker. A rail safety worker must immediately comply with a direction given by an authorised person for the purpose of requiring the worker to submit to a preliminary breath test or breath analysis. Penalties may apply in the event of non-compliance. RSNL s128

Further information on testing by an authorised person is available on the ONRSR website.

Rail transport operators must ensure that rail safety workers are aware of these obligations and responsibilities as well as any internal procedures developed as part of the drug and alcohol management program.

### *2.29.4 Notification requirements in the event of a possible breach*

The rail transport operator must give the Regulator a written report if a rail safety worker employed by a rail transport operator has returned a result to a test designed to determine the concentration of drugs or alcohol in a sample of breath, blood, oral fluid or urine that suggests that the worker was in breach of a relevant safety requirement concerning the use of drugs or alcohol at a relevant time. Regulation 57(1)(b)(xxi)

A relevant time means that the rail safety worker was about to carry out rail safety work, was carrying out rail safety work, was attempting to carry out rail safety work or was still on railway premises after carrying out rail safety work. As per the requirements for the notification of notifiable occurrences, this is considered a Category B occurrence and must be reported to the NRSR within 72 hours after becoming aware of the occurrence. Regulation 57(3)

In reporting this to the NRSR, the rail transport operator is not required to disclose the identity of the rail safety worker and rail transport operators will be subject to state and territory privacy laws, which may restrict the use of this information. Rail transport operators may obtain their own independent legal advice or contact the NRSR for information if further clarification is required.

Refer to section 2.24 (Notifiable occurrences) for further information.

### *2.29.5 Periodic reporting on drug and alcohol testing*

Rail transport operators are required to periodically report to the NRSR on the number of drug and alcohol tests conducted, including the type of tests conducted and the class of rail safety work undertaken by the rail safety workers who were tested. Regulation 56(1)(a)(i)

## 2.30 Fatigue risk management

Without limiting the overarching duty for rail transport operators to ensure, so far as is reasonably practicable, the safety of its railway operations, a rail transport operator’s obligations regarding fatigue risk management are to ensure, so far as is reasonably practicable, that rail safety workers who perform work in relation to the rail transport operator’s railway operations do not carry out rail safety work while impaired by fatigue or if they may become so impaired. This requirement applies to all classes of rail safety worker. RSNL s52(1)

RSNL s52(2)(d)

Irrespective of any specific requirements regarding fatigue risk management, the overarching duties apply and rail transport operators must demonstrate compliance with these duties.

Fatigue is psychophysiological: it affects one's physical capacity to perform work and the cognitive and other mental processes used in performing work. Fatigue may be caused by a range of factors, both work and non-work related, and may be compounded by individual characteristics, such as age or health and fitness. The effects of fatigue may include degraded capacity for information processing and decision making; slowed reaction times; reduced alertness, ability to concentrate and motivation; irritability, degraded hand eye coordination and spontaneous sleeping (including 'microsleeps').

The safety management system for a rail transport operator must include a fatigue risk management program to address the risks associated with these effects. A rail transport operator must prepare and implement such a program, in accordance with the requirements set out in Regulation 29 of the National Regulations, for the management of fatigue of rail safety workers (as defined in the RSNL).

RSNL s99(2)(f)
RSNL s116

Regulation 29 describes a non-exhaustive list of matters to be considered in developing the fatigue risk management program. It also requires rail transport operators to provide for safe hours of work, monitoring of hours of work and education and information to rail safety workers on the identification and management of fatigue-related risks. The fatigue risk management program must be fully integrated into the safety management system, as required by s99(2) of the RSNL.

Rail transport operators should ensure that the broader requirements for a safety management system are applied in relation to the fatigue risk management program (for example, consultation requirements, implementation of controls and supporting mechanisms, documentation requirements, resource requirements, etc.).

The extent of detail and the degree of risk controls required for the various elements of the fatigue risk management program will be scalable commensurate with the rail transport operator's assessment of the fatigue-related risks associated with its railway operations. The level of detail and nature of controls in a fatigue risk management program might vary for different workforce groups within an organisation, and among different sized organisations.

When considering fatigue risk management, rail transport operators should be aware they may have obligations under other pieces of legislation, such as work health and safety laws and industrial relations legislation. Rail transport operators may obtain their own independent legal advice or contact the ONRSR for information if further clarification is required.

### *2.30.1 Considerations for preparing or varying a fatigue risk management program*

A rail transport operator's fatigue risk management program must establish and maintain documented procedures to manage, so far as is reasonably practicable, fatigue-related risks.

Regulation 29(2)

When preparing a fatigue risk management program, a rail transport operator must take into account, and assess, any fatigue-related risks to safety arising from the factors identified in the Regulations (shown in italics *a* – *j*). Further information is provided below on each of these factors to assist with the identification of fatigue-related risks.

Regulation 29(1)

(a) *scheduling of work and non-work periods, including time-on-task and rest opportunities in shifts and the total period of time in which work is being carried out;*

Regulation 29(1)(a)

The nature and duration of work may induce fatigue, but the time of day at which work takes place is also important. Fatigue is also influenced by the length of time awake. Similarly broken sleep and day sleep may influence fatigue levels. The timing of shift start times may influence the amount of sleep obtained. Breaks within a shift may permit a worker time to shift focus away from their primary task and recover from the physical or mental demands of the task, may provide sleep opportunity and may divide the shift into sustainable periods of time-on-task and time-off-task to ensure attention can be sustained at a safe level.

Risks may arise from the effects of time-on-task, length of time awake, opportunity for sleep between shifts, breaks within shifts, the rotation of shifts and the timing of work on sleep and waking function.

(b) *call-in, on-call and lift-up and lay-back arrangements and extended hours of work, including overtime;*

Regulation 29(1)(b)

A lift up and lay back arrangement is defined as an arrangement where a rail safety worker commences a shift at an earlier or later time than the time for which the worker was originally scheduled to work.

Regulation 29(5)

Being ‘on-call’ (being available to be called in for work during a rest period) or having variable start times with little notice, which may come about due to call-in arrangements, may impact on the ability of workers to plan adequate sleep. Similarly, overtime may impact on the time available for rest before a subsequent shift.

Risks may arise from the effects of time-on-task, length of time awake, disruptions to sleep, difficulty planning/preparing for work or sleep and the timing of work on sleep and waking function.

(c) *the impact of work scheduling and relief practices generally on social and psychological factors that may impact on performance and safety, including the effect of scheduling practices, schedule predictability and irregularity and control over work hours on sleep loss, performance and safety;*

Regulation 29(1)(c)

Work hours may impact a workers’ non-work life, including domestic, personal and social needs, if time between periods of work is inadequate to account for such needs. Call-in, on-call and overtime work may contribute to schedule irregularity and the ability of workers to plan adequate sleep.

Risks may arise from scheduling practices, such as shift rotations or split shifts, workers’ opportunities for sleep, planning sleep and social requirements.

*(d) physiological factors arising out of work practices affecting rail safety workers, such as the effect on worker alertness and recovery of the time when work is undertaken, the length and frequency of breaks, commuting time, circadian effects, extended wakefulness, chronic sleep loss effects, and sleep inertia;*

Regulation 29(1)(d)

The body is governed by inbuilt biological rhythms, called the circadian rhythm, attuned to the cycles of day and night. Other things being equal, alertness is greatest during the day and the best sleep is obtained at night. Circadian 'low' points occur in the early hours of the morning and mid- afternoon; working through these periods may be more fatiguing.

The length of time awake influences fatigue levels and inadequate rest may have negative effects on performance.

Fatigue may be affected by a single break between shifts being inadequate; also, even when tolerated initially, inadequate rest may accumulate over a series of shifts resulting in 'sleep debt'.

Commuting time, the time spent travelling to and from work, may contribute to fatigue, may not provide rest in the same way as time spent at home and may decrease the amount of sleep opportunity.

When considering on-call scheduling practices or implementing napping policies, sleep inertia may need to be managed. This is a physiological state characterised by a decline in motor dexterity and a subjective feeling of grogginess immediately following an abrupt awakening. The impaired alertness may interfere with the ability to perform mental or physical tasks.

Risks may arise from physiological factors, including circadian effects and sleep inertia, the timing of breaks within shifts, the impacts of commuting time, the timing of rest opportunities and the cumulative effect of reduced sleep over a series of shifts.

*(e) the kinds of rail safety work being carried out, including—*

Regulation 29(1)(e)

*(i) work that requires significant physical exertion or high cognitive task demand; and*

*(ii) the degree of monotony or boredom or low cognitive task demand of the work;*

High levels of exertion, that is work that is physically demanding, can contribute to fatigue. Additionally, tasks that are mentally demanding (high cognitive demand), such as those that are stressful or require complex or simultaneous problem-solving, can also contribute to fatigue. Repetitive, monotonous or tedious tasks (low cognitive demand) may make workers more susceptible to the effects of fatigue.

Risks may arise from reduced performance and alertness as a result of task-related factors, including both the physical and cognitive load associated with the rail safety work being undertaken.

*(f) the variations in shifts and rest periods that may be required by different rail safety work requirements, including different routes, crew-call practices and predictability of working hours;*

Regulation 29(1)(f)

It may not be practical to stop or suspend work in certain circumstances and such operational requirements may result in restrictions on the frequency of breaks, and the opportunity for sleep may be limited or compromised. The timing of work, whether during daytime or night time hours, may also be determined by the nature of the work being undertaken. The work practices employed, such as the use of on-call or call-in working, may differ between the kinds of rail safety work or due to operational needs. Work practices that result in unpredictable shift patterns may contribute to disruptions to sleep or difficulty planning/preparing for work or sleep.

Risks may arise from time-on-task, length of time awake, disruptions to sleep, shift irregularity and the timing of work on sleep and waking function.

*(g) the suitability of rest environments, including barracks, rest houses and relay vans provided for rail safety workers by the operator;*

Regulation 29(1)(g)

Sleep may be disrupted, or the quality of sleep may be compromised, by heat, light, noise or vibrations in a rest environment. Similarly, poor conditions or inadequate facilities may impact on the rest obtained. Inadequate restorative rest may contribute to reduced performance and alertness for the following shift and may build across a series of shifts.

Risks may arise from inadequate sleep, disruptions to sleep or lack of restorative rest.

*(h) the physical environment in which rail safety work is to be carried out, including climatic conditions, noise, vibration and fumes;*

Regulation 29(1)(h)

Environmental factors and degraded conditions may add stressors, and may make workers more susceptible to the effects of fatigue.

Risks may arise from reduced performance and alertness.

*(i) fatigue risks arising from any one-off or occasional circumstances in which rail safety work may be required to be carried out, including in emergencies or under degraded or abnormal conditions, subject to the working hours being dependent on the rail safety workers' indication of their fitness to continue;*

Regulation 29(1)(i)

One-off or occasional circumstances should be planned for, including foreseeable emergency situations. However, some emergency situations, which could not be reasonably anticipated, may occur where rail safety workers may be exposed to abnormal conditions or extended hours of work. In such circumstances, communications between management and workers with respect to fatigue levels is required to ensure that safety standards are maintained.

Risks may arise from the effects of time-on-task, length of time awake, opportunity for sleep between shifts, environmental factors, difficulty planning/preparing for work and the timing of work on sleep and waking function.

*(j) relevant developments in research related to fatigue and any technology that may be applied to manage work-related fatigue.*

Regulation 29(1)(j)

Fatigue is an emerging science and management practices and

technologies are continually evolving. It is important that rail transport operators maintain awareness of pertinent developments and take into account and assess the relevance of such developments to their fatigue risk management program.

This guidance does not provide an exhaustive list of considerations. Rail transport operators must ensure that they take into account, and assess, any fatigue-related risks to safety, and the inter-relatedness of risks, regardless of whether they are specified above.

Similarly, not all factors will be applicable to all rail transport operators. Where a factor is assessed as not relevant, a record of this assessment should be kept.

RSNL s100

### *2.30.2 Education and information*

The fatigue risk management program must include the provision of appropriate education and information in relation to the identification and management of fatigue risks that are relevant to the rail safety work being undertaken. Rail safety workers should be made aware of their obligations under the RSNL and, importantly, under the fatigue risk management program, including any processes and procedures relevant to the rail safety work being undertaken.

Regulation 29(2)(c)

Education is particularly valuable with respect to fatigue risk management and should aim to prepare rail safety workers with the knowledge to prepare for and manage any risks that may arise. Rail safety workers should be made aware of the effects of fatigue in order to self-identify their own fatigue and identify fatigue in their co-workers. Education may assist rail safety workers in not only managing their fatigue at work, but also preparing for work and planning sleep and social time during break periods.

Education and information needs to be appropriate to the work being undertaken and may cover topics related to the effects of fatigue on performance, the nature and risks associated with shift work, various types of shifts, risks associated with secondary employment, circadian effects and sleep hygiene. An education program on fatigue risk management may be incorporated with other related programs, such as health and fitness or drug and alcohol management.

### *2.30.3 Managing risks associated with hours of work*

*NOTE: Rail transport operators with railway operations within New South Wales have additional requirements with respect to managing hours of work and rest for rail safety workers who drive trains. Guidance on these requirements is available on the ONRSR website.*

The fatigue risk management program must include specified work scheduling practices and procedures that provide for safe hours of work and safe periods of time between shifts. When considering whether hours of work and periods of time between shifts are ‘safe’, rail transport operators must be satisfied that the effect of implementing those hours or periods is sufficient to manage risks arising from fatigue, as identified under Regulation 29(1), so far as is reasonably practicable.

Regulation 29(2)(a)(i)(ii)

How rail transport operators document or structure their risk-based

determination of hours of work and rest is not specified in the legislation, but should be consistent with other risk management documentation. Rail transport operators should develop a system of work practices and procedures that is appropriate to their operations and the risks associated with each rail safety task. This may take the form of work scheduling practices (or rostering rules) for groups or classes of rail safety workers based on tasks performed, for classes of rail safety worker with respect to the risks presented by differing routes or geographical locations or even for individual workers.

Regulation 29(3)

Determining hours of work and rest and work scheduling practices may make reference to any scheduling or rostering rules that are deemed appropriate; for example, a rail transport operator may specify work scheduling practices that consider matters including (but not limited to):

- Length of shift
- Intervals or recovery breaks between shifts – scheduled to prevent build-up of fatigue between shifts; for example, total break time over a time period (for example, over a 7-day and/or 2-day and/or 24-hour period)
- Reset breaks – longer breaks between sequences of shifts, allowing workers to recover from possible sleep debt accumulated over a sequence of shifts
- Number of consecutive shifts between reset breaks
- Length of time on task between short break periods
- Length of break periods within shifts
- Napping breaks
- Timing of sleep opportunities
- Time of day when work is performed
- Timing of shift start times.

It is important to note that many dimensions of a schedule or roster interact and no one element should be considered in isolation. For example, the time of day when work is performed may influence the length of shift or the number of consecutive shifts in a sequence between reset breaks. Similarly shift length may be modulated by other risk factors (for example, shift length that accounts so far as is reasonably practicable for commute time, secondary employment or tasks not classed as rail safety work, training time).

Work scheduling practices should be developed to provide parameters to support scheduling or rostering and are not necessary the roster itself. For example, a work scheduling practice may require that a particular task not be undertaken for a period of over 4 hours without a 15-minute break being taken. The roster, for a worker undertaking that task, may provide two 15-minute breaks in a 5 hour shift to allow the worker some flexibility or to account for foreseeable delays.

Adequate provisions should be made, and risk controls implemented, to

account for occasional circumstances, routine delays or other situations that are foreseeable (including emergency situations and to account for sick leave or annual leave). As such, rail transport operators must include in the documented work scheduling practices sufficient rail safety workers to be available to meet reasonably foreseeable demands for relief arrangements.

Regulation 29(1)(a)(iii)

However, it is understood that rare situations may arise that could not be reasonably foreseen. These emergency situations may result in rail safety workers being exposed to abnormal, heightened workload or extended hours of work. In these situations, operators should give consideration to controls that may help to manage the resultant risk. For example, supplying additional support personnel, providing a bus to assist rail safety workers in their commute or altering planned rosters to provide for adequate recovery time prior to resumption of duties post-emergency.

Hours of work and rest may be an effective control to help manage the onset and effects of rail safety worker fatigue; however, fatigue risk management is considered broader than simply hours of work and rest, requiring consideration of matters including, but not limited, to those under Regulation 29(1). Complying solely with the requirement to specify work scheduling practices does not constitute compliance with the legislative obligations for fatigue risk management.

What is planned or rostered may vary for a variety of reasons during the course of operations. The fatigue risk management program must include procedures for monitoring how actual hours of work of rail safety workers compare with planned hours of work for rail safety workers. Additionally, the fatigue risk management program must include procedures for monitoring the impact of changes to planned rosters due to shift swapping, overtime and on-call working.

Regulation 29(1)(b)

### *2.30.4 Notification requirements*

A rail transport operator must notify the NRSR in writing of a proposed decision to change any work scheduling practices and procedures set out in the operator's fatigue risk management program at least 28 days before the date the operator intends to bring the change into effect.

Regulation 9(1)(a)

Refer to the *ONRSR Guideline: Notification of Change* for further guidance on these matters.

Furthermore, the operator must give the NRSR a written report of any breach of the work scheduling practices and procedures set out in the operator's fatigue risk management program. As per the requirements for the notification of notifiable occurrences, this is considered a category B occurrence and must be reported to the NRSR within 72 hours after becoming aware of the occurrence.

Regulation 57(b)(xv)

Regulation 57(3)

Refer to section 2.24 (Notifiable occurrences) for further information.

## 2.31 Resource availability

No management system can operate effectively if the resources available are not sufficient. The safety management system is required to include systems and procedures for estimating the resources, including people and

Regulations Schedule 1 Clause 30

equipment, that the rail transport operator will need:

- to operate and maintain its railway operations;
- to implement, manage and maintain its safety management system; and
- for the preparation of plans to ensure adequate access to the resources needed.

Such processes would be expected as a part the normal business planning cycle, in which resource needs for the coming period are estimated and planned for, and subsequently reviewed to ensure that resources are being appropriately managed. It is not intended that rail transport operators establish parallel resource monitoring processes that duplicate these normal business systems for the purposes of the safety management system.

In some areas resource requirements will be identified through risk assessment and control activities. For example, fatigue risk management programs may dictate availability of certain levels of staffing; human performance may be negatively affected by lack of resources; or critical tasks may not be able to be conducted or may be compromised due to a lack of availability of equipment required.

# 3 How to develop a compliant SMS

This section of the guideline explains the basic steps that a rail transport operator may follow to develop a safety management system that is compliant with RSNL.

It explains and places in context the various mandatory elements of the safety management system to make it clearer how the system fits together and may be integrated with broader management systems and processes of the rail transport operator.

Appendix 2 provides a list of resources that may be of further assistance to a rail transport operator when they are developing their safety management system.

The safety management system, like many other management systems, is founded on a cyclical process of planning, implementation, monitoring the system, and taking action to improve performance in the light of what has been learnt. This process aims for and, if effectively carried out, results in continuous improvement of the system, and an increasing ability of the system to achieve the system objectives. In the case of the rail safety management system, the system objective is the safety of railway operations.

The following sections explain how the mandatory safety management requirements of the RSNL come together to form the safety management system, and how accredited rail transport operators might go about establishing these systems to meet safety management obligations.

The following steps are required for the development of a safety management system:

1. Identify the scope of operations the safety management system will cover.

2. Establish governance arrangements and allocate resources (including responsibility for developing the SMS).
3. Establish consultation arrangements, or a consultation plan.
4. Establish safety policy.
5. Establish risk management systems and procedures.
6. Undertake risk assessments and identify risk controls and performance measures.
7. Implement controls and supporting mechanisms for risk controls.
8. Establish and Implement systems for monitoring review and system improvement.

## 3.1 Identify the scope of the safety management system

The first step in establishing a safety management system is to identify the scope of operations that the safety management system will cover.

The mandatory requirements for safety management under the RSNL including the implementation of a safety management system, apply only to railway operations for which rail accreditation is held.

*Railway operations* includes any of the following activities:

RSNL s4

- the construction of a railway, railway tracks and associated railway track structures;
- the construction of rolling stock;
- the management, commissioning, maintenance, repair, modification, installation, operation or decommissioning of rail infrastructure;
- the commissioning, use, modification, maintenance, repair or decommissioning of rolling stock;
- the operation or movement, or causing the operation or movement by any means, of rolling stock on a railway (including for the purposes of construction or restoration of rail infrastructure);
- the movement, or causing the movement, of rolling stock for the purposes of operating a railway service;
- the scheduling, control and monitoring of rolling stock being operated or moved on rail infrastructure.

In the case of existing accreditations, the notice of accreditation articulates the railway operations to which the accreditation applies.

In the case of an application for accreditation, the applicant will need to identify what railway operations they undertake that will require accreditation, and ensure that the safety management system is developed to cover all the relevant railway operations.

The safety management system must provide a level of detail in each mandatory element that is appropriate considering the scope, nature and risks to safety of the railway operations being undertaken and the need to comply with the general safety duties.

## 3.2 Identify or establish governance arrangements and allocate resources

Fundamental to the development of the safety management system, is the commitment to safety and the leadership provided by the highest levels of management through appropriate governance and internal control

arrangements and provision of appropriate resources for the development of the safety management system.

The highest levels of management should accept responsibility and delegate tasks necessary for the development of the safety management system. As the system grows and tasks and responsibilities for safety are identified, the responsibility for those tasks needs to be clearly assigned and documented.

## 3.3 Plan for consultation

Once governance arrangements are in place and resources have been allocated, the rail transport operator will need to put in place consultation arrangements or develop a consultation plan; see section 2.14.

Consultation must be undertaken before establishing the safety management system.

Consultation arrangements may evolve over the life of the project as new staff are engaged and the system requirements are developed.

The best results are achieved when consultation is undertaken throughout the development of the safety management system. Effective consultation promotes a positive safety culture by encouraging a sense of ownership for safety among those consulted, and gives the best chance that the systems implemented will meet the objectives of the organisation.

## 3.4 Establish safety policy

The safety policy gives direction for the further development of the safety management system. It should be developed consultatively with those who are to implement the policy, to promote a sense of ownership for safety among those who are to implement the safety management system. See also sections 2.3 and 2.22.

Rail transport operators are required to have a broad safety policy and an asset management policy.

## 3.5 Establish risk management systems and procedures

Risk management is the driving force behind the safety management system. Risk management systems and procedures, appropriately implemented will provide the information required for the development of the rest of the system. See also section 2.4.

Sections 2.17 Risk Management and 2.18 Human Factors give detailed guidance on risk management processes.

## 3.6 Undertake risk assessments and identify risk controls and performance measures

In this section, risk assessment refers to the steps of the risk management process described in AS/NZS ISO 31000:2009 Risk Management- Principles and Guidelines.

Risk identification analyses activities and identifies what could go wrong and what could cause things to go wrong. Railway operations are progressively broken down to their simplest component tasks and at each step of the

process, things that could go wrong are identified, the consequences of that event are identified and considered, ways of preventing it happening (controls), and ways of mitigating the consequences are identified, and a ranking is assigned. The more complex the system, the more complex the analysis required. See also sections 2.14 and 2.15.

The identification of possible safety incidents and their contributing factors and controls will provide information for the identification of both positive performance indicators and outcome indicators that may be adopted to measure the performance of the risk controls and the safety of railway operations. See also section 2.8.

Risk management systems and procedures need to be supported by an appropriate decision making framework.

### *3.6.1 Systems and procedures supporting risk identification*

Accredited rail transport operators are required to include in the safety management system a number of measures that provide information supporting the identification of risks. These include:

- internal reporting of incidents and accidents;
- internal reporting of risks to safety;
- consultation; and
- investigation of notifiable or other occurrences.

### *3.6.2 Mandatory risk control measures*

Accredited rail transport operators are required to comply with a range of particular risk control measures. These include systems and procedures for:

- human factors;
- general engineering and operational systems safety;
- process control;
- security management;
- emergency management;
- rail safety worker;
  - competence management;
  - fatigue management;
  - prevention of drug and alcohol use affecting railway operations;
  - health and fitness management; and
- management of change.

The regulatory requirements for these matters are necessarily generic. The risk assessments conducted by the rail transport operator provide the rail transport operator with the detail required for the development and implementation of these systems.

**For example:**
A risk assessment may consider the potential for a collision between trains. One factor that may contribute to a collision could be brake condition. Ensuring that the brakes of the train are in an appropriate condition may require:

- technical standards for brakes of that type or for that type of rolling stock. Technical standards should take into consideration the environment in

which the rolling stock is to be operated, the

- inevitable need for maintenance. The design of the brakes should minimize the opportunities for human error during maintenance, perhaps by ensuring that a component that must be replaced in a particular position will not fit in any but the correct position.
- standard inspection and maintenance procedures for brakes of that type that consider human factors issues and are designed to minimize opportunities for human error.
- competence standards and management for rail safety workers inspecting or maintaining the brakes – with content directly linked to the technical standards and procedures relevant to the tasks being undertaken.
- appropriate supervision of maintenance staff. For example checks of required paperwork, or second person sign off at any safety critical stages of the maintenance process.
- application of fatigue and drug and alcohol controls for rail safety workers undertaking the inspection and maintenance of brakes.
- assessment of the time and resources taken to perform the maintenance task, and planning to ensure that staff are not conducting safety critical tasks under performance degrading levels of time pressure. Where time pressure is unavoidable, what additional control measures are available to ensure that critical mistakes do not occur.

## 3.7 Implement controls and supporting mechanisms for controls

Having identified the risks, and necessary risk controls, the rail transport operator will need to identify what supporting systems and procedures are required for the effective implementation of those risk controls.

### *3.7.1 Mandatory supporting mechanisms for risk controls*

The RSNL imposes a number of mandatory supporting mechanisms. These are:

- **regulatory compliance** – this includes systems and procedures for identification of and compliance with regulatory requirements;
- **document control and information management** – this includes broad organisational systems to ensure that rail safety workers and others have access to current and/or accurate information necessary for the conduct of their role in the system;
- **internal communication** – this includes systems to support the dissemination of information.
- **procurement and contract management** – this includes systems to ensure that contracting for goods or services takes account of the necessary safety aspects.
- **safety interface coordination** – this includes systems to ensure that where risks occur at or arising from an interface the responsibility for risk controls is appropriately assigned and understood by all those with a role in the implementation of the control.
- **resource availability** – this includes systems to ensure that the necessary resources are available for the implementation of necessary risks controls.

## 3.8 Establish and implement systems for monitoring, review and system improvement

Accredited rail transport operators are required to include in the safety management system measures to support monitoring and review of the performance of the safety management system. The RSNL requires the following mandatory systems and procedures for system monitoring and review:

- **review of the safety management system** – this includes systems and procedures for regular review of the effectiveness of the safety management system;
- **safety performance measures** – this includes systems to ensure the collection, analysis, assessment and dissemination of safety information, and the measurement and assessment of system performance using key performance indicators;
- **safety audit arrangements** – this includes systems to ensure that safety audits are undertaken and that priority is given to matters that represent the greatest safety risk; and
- **corrective action** – this includes systems to ensure action is taken to correct deficiencies identified in the safety management system, and that priority is given to taking corrective action on those matters representing the greatest risk.

## 3.9 Safety management system – bringing it all together

Together, the policy, governance and leadership, risk management arrangements, mechanisms to support control measures, and mechanisms for monitoring, review and correction of deficiencies, make up the safety management system.

There is no one ‘correct’ structure for the system. As a system designed to meet the needs of the rail transport operator, it will necessarily vary according to the structure and context of the rail transport operator.

The risk register performs a central role by providing a central point, where the elements of the safety management system are brought together in sharp focus with their reason for existence – the control of identified risks to the safety of railway operations.

The risk register should provide links to the various elements of the safety management system that are necessary for the successful implementation of the risk control.

There is no requirement that a rail transport operator’s safety management system be structured, or presented, exactly in line with the structure of the legislation or this ONRSR guideline. The primary objective is to ensure that the people who use the system find it comprehensible, that it is as simple and user friendly as reasonably possible and achieves the objective – a high level of safety awareness and commitment throughout all levels of the rail transport operator.

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## Appendix 1: General SMS Checklist

### GENERAL SMS CHECKLIST

- This checklist may be used by accredited rail transport operators to review compliance with the required contents of a safety management system, including as part of a change management process or annual review.
- Legislative reference is Schedule 1 of the National Regulations.
- The Rail Safety National Law and National Regulations should be used as a reference when completing this checklist.
- Supporting evidence or descriptions of how the provision is being or will be met should be attached.

Completed by: Date:

**2) Safety policy** ☐

(1) A safety policy or policies that aligns or align with other organisational policies and that is, or that are, endorsed by the chief executive and governing body of the rail transport operator. ☐

(2) A safety policy or policies that include/s or include an express commitment to safety, the development and maintenance of a positive safety culture and the continuous improvement of all aspects of the safety management system. ☐

**3) Safety culture**

Methods to promote and maintain a positive safety culture, so far as is reasonably practicable, with consideration given to— ☐

(a) the importance of leadership and commitment of senior management; and ☐

(b) the executive safety role of line management; and ☐

(c) the need to involve rail safety workers at all levels; and ☐

(d) encouraging open communication; and ☐

(e) the need for human factors to be positively addressed; and ☐

(f) the promotion of a just culture and environment; and ☐

(g) the awareness and recognition of opportunities for safety improvement; and ☐

(h) a willingness to devote resources to safety. ☐

**4) Governance and internal control arrangements**

(1) Systems and procedures to ensure that the chief executive and governing body of the rail transport operator, or the people managing the railway operations, have sufficient knowledge— ☐

(a) of the risk profile of the railway operations carried out by the rail transport operator to enable the operator to probatively manage the risks arising from those operations; and ☐

(b) of the level of compliance by the organisation with its duties and obligations under the Law and these regulations; and ☐

(c) to determine whether— ☐

(i) the safety management system is working effectively; and ☐

(ii) risks to safety are being identified, assessed and managed so far as is reasonably practicable; and ☐

(iii) controls used to monitor safety and to manage risks to safety are being regularly ☐

reviewed and revised.

(2) Systems and procedures to ensure that decisions and directions made by the chief executive and governing body of the rail transport operator, or of the people managing the railway operations, that affect safety are being implemented effectively. ☐

**5) Management, responsibilities, accountabilities and authorities**

(1) Policies that indicate how safety responsibilities, accountabilities, authorities and interrelationships have been determined. ☐

(2) Documents that describe the responsibilities, accountabilities, authorities and interrelation of the personnel who manage or carry out rail safety work, or who verify such work. ☐

(3) Procedures for the reporting of risks to safety by personnel with safety responsibilities. ☐

(4) Documents that describe the authorities given to personnel with safety responsibilities to enable them to meet those responsibilities. ☐

**6) Regulatory compliance**

(1) Systems and procedures for the identification of safety requirements under the Law and other safety legislation. ☐

(2) Systems and procedures to ensure compliance with those requirements. ☐

**7) Document control arrangements and information management**

Systems and procedures to control and manage all documents and information relevant to the management of risks to safety associated with railway operations, including systems and procedures for—

(a) the identification, creation, maintenance, management, storage and retention of records and documents; and ☐

(b) ensuring the currency of documents required for operations; and ☐

(c) the communication of any changes to the document control systems and procedures to rail safety workers and employees of the rail transport operator who rely on those systems and procedures to carry out their work. ☐

**8) Review of the safety management system**

(1) Systems and procedures for the review of the safety management system in accordance with section 102 (*Review of safety management system*) of the Law and regulation 17. ☐

(2) Documentation of the matters set out in regulation 17(3). ☐

**9) Safety performance measures**

(1) Systems and procedures to ensure that the safety management system is effective by using key performance indicators to measure safety performance and determine the effectiveness of the safety management system. ☐

(2) Systems and procedures to ensure the collection, analysis, assessment and dissemination of safety information held by the rail transport operator. ☐

**10) Safety audit arrangements**

(1) An audit program that provides for— ☐

(a) the scheduling and frequency of audits; and ☐

(b) safety management system audits as part of the audit program; and ☐

(c) the giving of priority to those matters that represent the greatest safety risk. ☐

(2) Documented audit procedures to ensure there is a process for the collection of ☐

information to determine whether the railway operations comply with the safety management system and the effectiveness of the safety management system.

(3) Procedures to ensure that auditors— ☐

(a) have the skills and knowledge to undertake audits; and ☐

(b) are independent from the area being audited to the maximum extent that is practicable. ☐

(4) Procedures for— ☐

(a) communicating the results of audits to those people who are responsible for the oversight of the railway operations in the area audited for review and, where appropriate, for corrective action; and ☐

(b) where appropriate, the registration and effective implementation of recommendations for action identified by the audit; and ☐

(c) the review of the effectiveness of the audit program. ☐

**11) Corrective action**

(1) Procedures to ensure, so far as is reasonably practicable, that corrective action is taken in response to any safety deficiencies identified following inspections, testing, audits, investigations or notifiable occurrences. ☐

(2) Procedures for— ☐

(a) registering any corrective actions taken; and ☐

(b) the review of those corrective actions; and ☐

(c) the implementation of corrective action if it is determined that corrective action is required; and ☐

(d) the assigning of responsibilities for corrective action. ☐

(3) Procedures for giving priority, when undertaking corrective action, to those matters representing the greatest safety risk. ☐

**12) Management of change**

Procedures for ensuring that changes that may affect the safety of railway operations are identified and managed, including procedures for ensuring, so far as is reasonably practicable, that—

(a) changes are fully identified and described in the context of the railway operations; and ☐

(b) affected parties are identified and, if practicable, consulted; and ☐

(c) the roles and responsibilities of rail safety workers and employees of the rail transport operator are clearly specified with respect to the change; and ☐

(d) the rail safety workers and employees of the rail transport operator are fully informed and trained to understand and deal with the proposed change; and ☐

(e) the requirements of section 99(1)(c) and (d) (*Safety management system*) of the Law are observed in relation to any risks associated with the proposed change; and ☐

(f) the change, once implemented, is reviewed and assessed by the rail transport operator to determine whether or not the change has been appropriately managed. ☐

**13) Consultation**

Systems and procedures to ensure that the consultation required by section 99(3)(*Safety management system*) of the Law occurs when the safety management system is reviewed or varied. ☐

**14) Internal communication**

Systems and procedures—

(a) for the dissemination of information about the content of the safety management system to people who are to participate in the implementation of the system or who may be otherwise affected by the implementation; and ☐

(b) for the communication of the rail transport operator's safety policy and safety objectives to all people who are to participate in the implementation of the safety management system; and ☐

(c) for the internal reporting of accidents and incidents involving the operator's railway operations, including accidents and incidents involving contractors and subcontractors; and ☐

(d) to support communication and the dissemination of information throughout, and between all levels of, the operator's railway operations. ☐

**15) Training and instruction**

(1) Systems and procedures— ☐

(a) for the training of rail safety workers who are to participate in the implementation of the safety management system or who may otherwise be affected by the implementation; and ☐

(b) to encourage the awareness, understanding and participation of rail safety workers in the safety management system. ☐

(2) Provision for induction and ongoing training with regard to rail safety including information, instruction and training on new work practices, procedures, policies and standards, specified hazards and relevant control measures. ☐

**16) Risk management**

(1) Systems and procedures for compliance with the risk management obligations set out in sections 46(*Management of risks*) and 99(1)(c), (d) and (e) (*Safety management system*) of the Law. ☐

(2) A risk register that includes— ☐

(a) a listing of the risks to safety identified under section 99(1)(c) (*Safety management system*) of the Law; and ☐

(b) details of the assessment of those risks (including their likelihood, likely consequences and ranking); and ☐

(c) a description of any elimination or risk control measures that are to be used to manage, so far as is reasonably practicable, those risks, including, where appropriate— ☐

(i) the identification of who is responsible for implementing the measures; and ☐

(ii) a reference to the general location or locations in the safety management system where more details on the measures can be found. ☐

(3) Systems and procedures to ensure that the details in the register are current, so far as is reasonably practicable. ☐

**17) Human factors**

Procedures to ensure that human factor matters are taken into account during the development, operation and maintenance of the safety management system and for the integration of human factors principles and knowledge into all relevant aspects of operational and business systems. ☐

**18) Procurement and contract management**

Systems and procedures—

(a) for the review of tender documents and contracts to ensure that safety ☐

requirements under the safety management system are adequately defined and documented in those tender documents and contracts; and

(b) to ensure that the terms of any tender documents or contracts do not lead to unsafe work or an activity that may affect the safety of railway operations; and ☐

(c) for the selection and control of contractors and to ensure the monitoring of the performance of contractors, including conducting or commissioning audits of the contractor's performance in relation to the safety aspects of the contract; and ☐

(d) to ensure that safety duties under the Law are being met under contracts, and procedures for the taking of remedial action where necessary; and ☐

(e) to ensure that goods and services provided to the railway operation meet the standards and specifications required for the safety of the railway operation. ☐

**19) General engineering and operational systems safety requirements**

(1) A documented set of engineering standards and procedures, and operational systems, safety standards and procedures, to cover the following, and, if relevant, the interface between any 2 or more of them: ☐

(a) rail infrastructure; ☐

(b) rolling stock; ☐

(c) operational systems. ☐

(2) Details of the implementation and updating of the documents specified above. ☐

(3) Procedures for the control and verification of the design of structures, rolling stock, equipment, and systems, in accordance with the engineering standards and procedures, and operational systems safety standards specified in subclause (1). ☐

(4) Systems, procedures and standards for the following in relation to rail infrastructure and rolling stock: ☐

(a) engineering design; ☐

(b) construction and installation; ☐

(c) implementation and commissioning; ☐

(d) monitoring and maintenance; ☐

(e) system operation; ☐

(f) modification; ☐

(g) decommissioning or disposal. ☐

**20) Process control**

(1) Procedures for the rail transport operator to monitor the operator's compliance with the standards and procedures specified in clause 19, including procedures for the inspection and testing of safety related engineering and operational systems. ☐

(2) Procedures for the control, calibration and maintenance of all equipment used to inspect or test rail infrastructure or rolling stock. ☐

(3) Arrangements for the establishment and maintenance of inspection and test records to provide evidence of the condition of rail infrastructure or rolling stock. ☐

**21) Asset management**

An asset management policy and processes that address all phases of the asset life cycle of the rail infrastructure or rolling stock operations. ☐

**22) Safety Interface coordination**

(1) Procedures for the identification of interface risks to the safety of railway operations and for the development and implementation of interface agreements in accordance with Part 3 Division 6 Subdivision 2 (*Interface agreements*) of the Law. ☐

(2) Procedures for monitoring the implementation and effectiveness of and compliance with interface agreements. ☐

**23) Management of notifiable occurrences**

(1) Systems and procedures for the reporting of notifiable occurrences in accordance with regulation 57. ☐

(2) Procedures for the management of the scene of a notifiable occurrence and for the preservation of evidence where reasonably practicable. ☐

(3) Procedures for the management of all notifiable occurrences, including procedures to enable the determination of which notifiable occurrences are to be investigated, and how investigations are to be conducted. ☐

**24) Rail safety worker competence**

Procedures and, where necessary, standards to ensure compliance with section 117 (*Assessment of competence*) of the Law. ☐

**25) Security management**

(1) The security management plan required by section 112 (*Security management plan*) of the Law. ☐

(2) Systems and procedures to ensure compliance with section 112 (*Security management plan*) of the Law and regulation 18. ☐

**26) Emergency management**

(1) The emergency management plan required by section 113 (*Emergency management plan*) of the Law. ☐

(2) Systems and procedures to ensure compliance with section 113 (*Emergency management plan*) of the Law and Part 4 Division 3 of these regulations. ☐

**27) Health and fitness**

Systems and procedures to ensure compliance with section 114 (*Health and fitness management program*) of the Law and with regulation 27. ☐

**28) Drugs and alcohol**

Systems and procedures to ensure compliance with section 115 (*Drug and alcohol management program*) of the Law and with regulation 28. ☐

**29) Fatigue risk management**

Systems and procedures to ensure compliance with section 116 (*Fatigue risk management program*) of the Law and regulation 29. ☐

**30) Resource availability**

Systems and procedures for estimating the resources, including people and equipment, that the rail transport operator will need to operate and maintain the operator's railway operations and to implement, manage and maintain its safety management system, and for the preparation of plans to ensure that it has adequate access to those resources. ☐

## Appendix 2: References and resources

**Office of the National Rail Safety Regulator**
Legislation, policies, guidance and other tools are available on the ONRSR website at www.onrsr.com.au

**Australian Standards**
Australian standards may be a useful source of additional and more detailed guidance on specific aspects of rail safety management. There are many useful standards, some of these include:

- AS/NZS ISO 31000:2009 Risk Management- Principles and Guidelines
- HB 89-2012 Risk management - Guidelines on risk assessment techniques
- HB 436:2004 Risk Management Guidelines Companion to AS/NZS 4360:2004
- AS 4292.1:2006 Railway Safety Management – General Requirements
- AS 4292.2:2006 Railway Safety Management – Track, Civil and Electrical Infrastructure
- AS 4292.3:2006 Railway Safety Management – Rolling Stock
- AS 4292.4:2006 Railway Safety Management – Signalling and Telecommunications Systems and Equipment
- AS 4292.5:2006 Railway Safety Management – Operational Systems
- AS 4292.7:2006 Railway Safety Management – Railway Safety Investigation

**National Health Assessment Standard**
National Transport Commission (NTC) "*National Standard for Health Assessment of Rail Safety Workers*" available from www.ntc.gov.au

**Other guides**
Rail transport operators should refer to these guidelines at their discretion:

Rail Industry and Standards Board (RISSB) (2010) "*National Guideline: Rail Emergency Management Planning*", v1.01, available from www.rissb.com.au/

Rail Safety Regulators' Panel (2011) "*Contributing Factors Framework (CFF) Manual"*, v2 available from www.rsrp.asn.au