

National Rail Safety Guideline

Preparation of a Rail Safety Management System



This national guideline is one of a series of six containing guidance for rail safety regulators, industry stakeholders and other parties about aspects of rail safety legislation.

National Guideline for the Requirements of a Rail Safety Management System

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Prepared by: Rail Safety Regulators Panel in conjunction with the National Transport Commission

I Foreword

The National Transport Commission (NTC) is an independent body established under Commonwealth legislation and an inter-governmental agreement, and funded jointly by the Commonwealth, States and Territories. In accordance with its duties, the NTC has developed a national model *Rail Safety Bill 2006* and *Rail Safety Regulations 2006* to achieve a nationally consistent approach to regulating rail safety in Australia. The model legislation was developed in conjunction with representatives of all jurisdictions, the rail industry and rail unions and was approved by the Australian Transport Council in 2006. The national model Bill and Regulations will receive legal effect when enacted in State and Territory law.

Within each State and Territory, the rail safety regulators are responsible for administering rail safety legislation and in some jurisdictions, this responsibility extends to the preparation of rail safety guidelines. Rail safety regulators' national activities are coordinated through their collegiate body, the Rail Safety Regulators Panel (RSRP) which together with the NTC is responsible for the development of this guideline.

National Guidelines

National guidelines are intended to assist rail safety regulators, industry stakeholders and other relevant parties with duties under the rail safety legislation to understand and comply with the new legislative requirements. National guidelines are administrative documents that are intended to provide practical advice. Guidelines do not extend, add to or modify legislative obligations contained in the *Rail Safety Bill 2006* or *Rail Safety Regulations 2006*. Depending on the subject matter, guidelines may:

- articulate how rail safety regulators will conduct themselves when undertaking their functions to ensure that their processes are transparent to the duty holders (e.g. *National Guideline for Compliance and Enforcement for Rail Safety*);
- provide nationally consistent and/or integrated processes by which rail safety regulators will make decisions (e.g. *National Guideline for Uniform Administration of Accreditation*); or
- assist duty holders with the interpretation of legislative provisions and provide practical guidance for satisfying these requirements (e.g. *National Guideline for Accreditation of Rail Transport Operators*, *National Guideline for the Requirements of a Rail Safety Management System*).

National guidelines impose no legal duties or requirements. Failure to comply with a national guideline does not give rise to any civil or criminal liability. Where actions or outcomes are described as being mandatory in the guidelines, this is because those actions or outcomes reflect provisions in the *Rail Safety Bill 2006* or *Rail Safety Regulations 2006*.

The advice provided in the national guidelines has been expressed in general terms. Rail transport operators and other duty holders should not assume that the advice and any examples provided automatically apply to the operating conditions and environmental circumstances of their railway operations. They should be used as a guide only.

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1. Introduction

1.1 Purpose

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

- the legislative requirements for safety management and what the rail safety regulator looks for when assessing the safety management system; and
- how to prepare a safety management system that complies with the legislative requirements.

The guideline is intended to be read in conjunction with the legislation. Readers are referred to the rail safety legislation specific to each jurisdiction where accreditation is sought and/or granted.

Guidance in relation to whether or not accreditation is required is provided by the *National Guideline for Accreditation of Rail Transport Operators* and is not included in this guideline.

1.2 Content and status

This guideline comprises two main sections. The first provides a plain English explanation of regulatory requirements relevant to the safety management system and what the rail safety regulator 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 3 provides resources that may be of further assistance to a rail transport operator when they are developing their safety management system.

Definitions provided by rail safety legislation 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 Rail Safety Regulators Panel, 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.

This *National Guideline for the Requirements of a Rail Safety Management System* is intended to be a guide only. 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.

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 *National Guideline for the Requirements of a Rail Safety Management System*. 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 Context – the national model rail safety legislation

1.3.1 The national model rail safety legislation

The Inter-governmental Agreement for Regulatory and Operational Reform in Road, Rail and Intermodal Transport requires the development of a framework to improve and strengthen the co-regulatory system for rail safety. The national model *Rail Safety Bill* was developed by the National Transport Commission in accordance with the requirements of the inter-governmental agreement.

The model *Rail Safety Bill* was developed by the National Transport Commission (NTC) following an extensive review of the current co-regulatory approach to rail safety in Australia. It was developed in conjunction with representatives from the rail safety regulators and transport agencies of all states, territories and the Commonwealth, the rail industry and rail unions and other relevant regulatory agencies.

The national model Bill is accompanied by regulations and both will be given legal effect when their provisions are reproduced in the legislation of each State and Territory.

The objectives of the national model Bill place a high value on the effective management and control of risk to improve safety in railway operations and to promote public confidence in the safety of rail transport.

The national model Bill brings rail safety legislation in Australia into line with modern regulatory approaches for safety. The key features include:

- general duties that apply to responsible parties and establish a 'chain of 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;
- clearer responsibilities for the rail safety regulator and strengthened audit and enforcement powers; and
- a hierarchy of sanctions and penalties where breaches of rail safety requirements occur.

The meaning of *railway operations* to which the national model Bill applies is very broad. It includes the operations and movement of rolling stock by any means; the construction of rolling stock or a railway, tracks or associated track structures; and the management, commissioning, maintenance, repair, modification, installation, operation or decommissioning of rail infrastructure and similarly, of rolling stock.

1.3.2 National guidelines for rail safety

This guideline is one of a suite of National Rail Safety Guidelines which are intended to assist rail safety regulators, industry stakeholders and other relevant parties with duties under the rail safety legislation to understand and comply with the new legislative requirements.

National guidelines are administrative documents that are intended to provide practical advice. Guidelines do not extend, add to or modify legislative obligations contained in the *Rail Safety Bill 2006* or *Rail Safety Regulations 2006*. Depending on the subject matter, guidelines may:

- articulate how rail safety regulators will behave when undertaking their functions to ensure that their processes are transparent to the duty holders (e.g. *National Guideline for Compliance and Enforcement of Rail Safety*);
- provide nationally consistent and/or integrated processes by which rail safety regulators will make decisions (e.g. *National Guideline for Uniform Administration of Accreditation*);
- assist duty holders with the interpretation of legislative provisions and provide practical guidance for satisfying these requirements (e.g. *National Guideline for Accreditation of Rail Transport Operators*, *National Guideline for Requirements of Safety Management Systems*).

National guidelines impose no legal duties or requirements. Failure to comply with a national guideline does not give rise to any civil or criminal liability. Where actions or outcomes are described as being mandatory in the guidelines, this is because those actions or outcomes reflect provisions in the *Rail Safety Bill 2006* or *Rail Safety Regulations 2006*.

The advice provided in the national guidelines has been expressed in general terms. Rail transport operators and other duty holders should not assume that the advice and any examples provided automatically apply to the operating conditions and environmental circumstances of their railway operations. They should be used as a guide only.

National Rail Safety Guidelines are developed and maintained through a formal process agreed by and involving rail safety regulators and industry, and facilitated by the National Transport Commission. Through this process, this guideline will be reviewed and amended from time to time to take into account amendments to legislation, feedback from industry as to its usefulness, and changes which the rail safety regulators consider desirable.

2. | Guidance on Regulatory Requirements

This section of the guideline provides a plain English explanation of regulatory requirements relevant to the safety management system and what the rail safety regulator looks for when assessing the safety management system.

RSB s57 (1)(a)

2.1 Form of the safety management system

The safety management system must be in a form determined by legislation and approved by the rail safety regulator. It must:

s57 (4)

- 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.

s57(4) (a) and (b)

The safety management system must incorporate a safety management plan, which describes, and serves as a guide to, the safety management system.

RSB 33(2) (b)

The safety management plan:

- provides contextual information as to the organisation to which the safety management system applies, including organisational charts;
- specifies the scope and nature of the railway operations to which the safety management system applies. (Further information in relation to describing the scope and nature of railway operations is provided by the *National Guideline for Accreditation of Rail Transport Operators*);
- states the persons responsible for the implementation of the safety management system and the relationship between these persons. The plan should explain the framework for implementation of the safety management system and keeping the safety management system up to date;
- includes the rail transport operator's risk register;
- lists the elements of the safety management system and, where appropriate, explains the relationship between the elements of the safety management system;
- provides a list of key standards and procedures and an indication of the safety management system elements to which they relate; and

Schedule 1(M)(2)

NM Reg 9 also s4

s4

- includes 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 Safety management system elements

NM Reg 9

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.

Rail transport operators must undertake consultation in accordance with the legislation before establishing a safety management system. (See section 2.14 Consultation).

RSB s57 and s60 – 69
NM Reg Schedule 1

The matters (elements) that must be addressed in the safety management system are:

- 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;
- 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;
- security management;
- emergency management;
- rail safety worker competence;
- fatigue;
- drugs and alcohol;
- health and fitness;
- resource availability.

Specific requirements for each of these elements are discussed below.

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).

NM Reg
Schedule 1A

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.

NM Reg
Schedule 1L (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.

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

The legislation does not currently include mandatory requirements in relation to safety culture beyond the requirement for the rail transport operator's safety policy to include a commitment to the development and maintenance of a positive safety culture.

NM Reg
Schedule 1A

The following guidance is provided to assist rail transport operators to understand what such a commitment means.

Organisations with a positive safety culture are 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 to which organisations should aspire are:

- **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 organisations 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) are responsible for the conduct and performance of the rail transport operator. 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 legislation, 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 law 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:

NM Reg
Schedule 1B

- have sufficient knowledge of the risk profile of the railway operations being carried out, to enable proactive management of the risks of the 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.
- **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 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:

- 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. Each person needs to understand where they fit in the system, and what other functions are reliant on the role that they undertake.

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.

Safety responsibilities, accountabilities, authorities and interrelationships should be determined in accordance with the 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.

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 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 rail safety and other safety legislation.

A preliminary step in conducting a risk assessment exercise is to identify the internal and external context in which the activities being assessed are conducted. Safety requirements under the rail safety legislation 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.

RSB Part 2

Rail safety legislation adds to the protection provided by occupational health and safety (OHS) legislation. If a provision of OHS legislation applies to railway operations, that provision continues to apply, and must be observed, in addition to rail safety legislation. OHS legislation takes precedence over rail safety legislation if it is found that there is an inconsistency between the requirements of each.

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

2.8 Document control arrangements and information management

NM Reg
Schedule 1E

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 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 by workers authorised by the rail transport operator for that purpose. 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 may be necessary to ensure 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 do 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

RSB s59
NM Reg
Schedule 1F

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 rail safety regulator.

RSB s57(2)
NM Reg cl 19(2)

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.

NM Reg cl 19

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

- 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). See also 2.12 Corrective Action.

NM Reg cl 19(4)

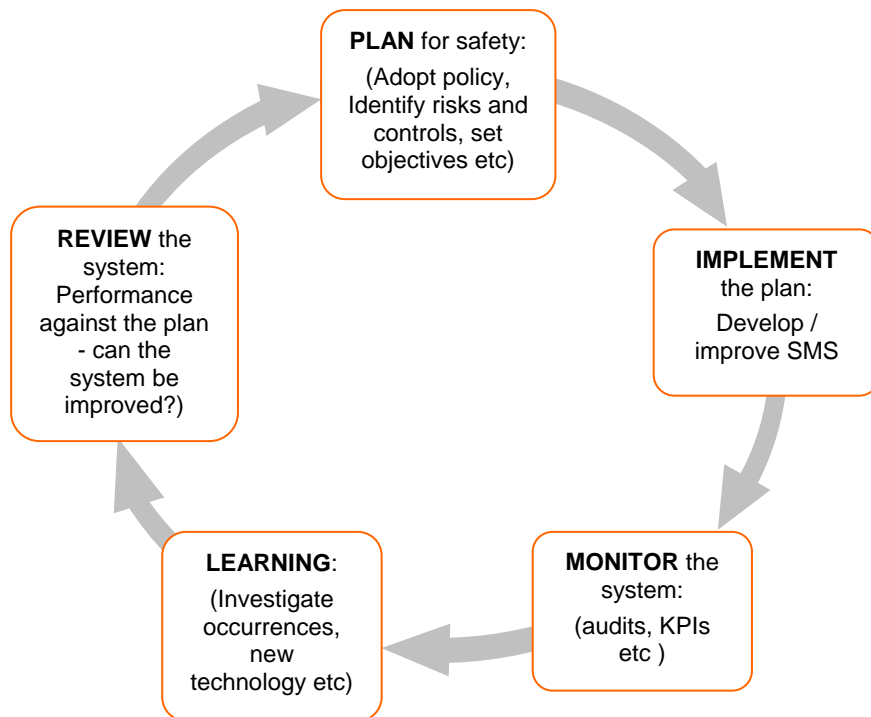
NM Reg
Schedule 1F (2)

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 rail safety regulator.

While the rail transport operator is required to review its SMS and report to the rail safety regulator as listed above. The rail transport operator 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.

Figure 1: The continuous improvement cycle



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.

NM Reg
Schedule 1G (1)

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. 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.

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.

NM Reg
Schedule 1G (2)

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.

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

NM Reg
Schedule 1H (1)

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

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

NM Reg
Schedule 1H (2), (3)

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.
- 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.

NM Reg
Schedule 1H (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 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

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.

NM Reg
Schedule 11 (1)

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.

NM Reg
Schedule 11 (2)

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

The safety management system must include procedures for ensuring that 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, and that railway operations continue to be undertaken in a manner that is as safe as is reasonably practicable. An effective management of change process also will aid in consistent decision making and provide assurance that the rail transport operator continues to operate in compliance with applicable laws and within the conditions and restrictions on 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 validation documentation forming part of a project safety plan. A project safety plan may be an evolutionary document. For example it may initially set out assumptions replacing these with more factual information as it becomes available. Similarly, the project safety plan may initially set out the risk assessment methodology and findings, later incorporating the safety requirements.

2.13.1 A systems view of change

Change within systems frequently has flow on effects to other parts of the system and can have unintended consequences if all effects of the change or influences on the change are not identified. The management of change process is expressly intended to ensure that all such effects and influences are identified and managed. Elements within a rail organisation that may influence or be affected by change include:

- 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.

The change may have an impact on these elements across their lifecycle from conception and design, to commissioning, operations, maintenance and decommissioning.

A change may be influenced by, or affect one or more of, the above elements and/or the interfaces between these elements. As such, it is useful to take a systems 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 the relevant elements impacted by change is the organisation's safety management system.

2.13.2 Required elements for management of change

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 reasonably practicable that:

- the change is fully identified, described and documented in the context of the specific rail organisation;
- 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;
- the rail safety workers and employees of the rail transport operator are fully informed and trained to understand and deal with the proposed change;
- this will involve a review of the competence requirements for the tasks to be undertaken (see 2.24 Rail safety worker competence);
- review and assessment of the change, once implemented is undertaken to determine whether the change has been appropriately managed;

NM Reg
Schedule 1J

NM Reg Schedule
1J (a) and 1E

NM Reg Schedule 1J (b)
also RSB s 57(2)

NM Reg
Schedule 1C

NM Reg
Schedule 1M

NM Reg
Schedule 1D

NM Reg
Schedule 1U and L

NM Reg
Schedule 1L

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 rail safety regulator within the time prescribed in the legislation and reproduced at Appendix 1.

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 they are implemented. Further guidance on processes and requirements for variation of accreditation are provided in the *National Guideline for Accreditation of Rail Transport Operators*.

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, or organisational restructuring.

External sources for change may include: rail safety regulators; safety investigation authorities; road authorities; other rail transport operators; suppliers; 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, such as legislative reform, and including 'creeping' or 'incremental' change, where the impact at any time may seem minor, but which over a period can significantly increase risk;
- a change to an interface;
- a mandated Government project;
- temporary change;
- emergency or abnormal change which may be required within a short timeframe and therefore may require different controls.

The management of change process should enable the different types of change to be identified in advance and managed appropriately.

2.13.5 Consultation during change

Consultation with stakeholders is an integral part of managing change and should be included, where reasonably practicable, at regular intervals throughout the management of change process.

Consultation with the following groups must be undertaken, so far as is reasonably practicable, before varying the safety management system (see also section 2.14 Consultation).

- persons carrying out railway operations and others working at the railway premises or with relevant rolling stock, who are likely to be affected by the change (affected persons);
- health and safety representatives and unions representing affected persons;
- any other rail transport operator with whom an interface coordination plan is in place; and
- where appropriate, the public.

The objectives of consultation are to:

RSB s57(2)

- exchange all information necessary for identification and assessment of the options for change, and the possible impact of each option;
- ensure that all relevant personnel in the rail transport operator, interfacing external organisations and other affected persons are aware of the proposed change, have an opportunity 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 particular 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;
- 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.

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.

2.13.6 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 its 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.

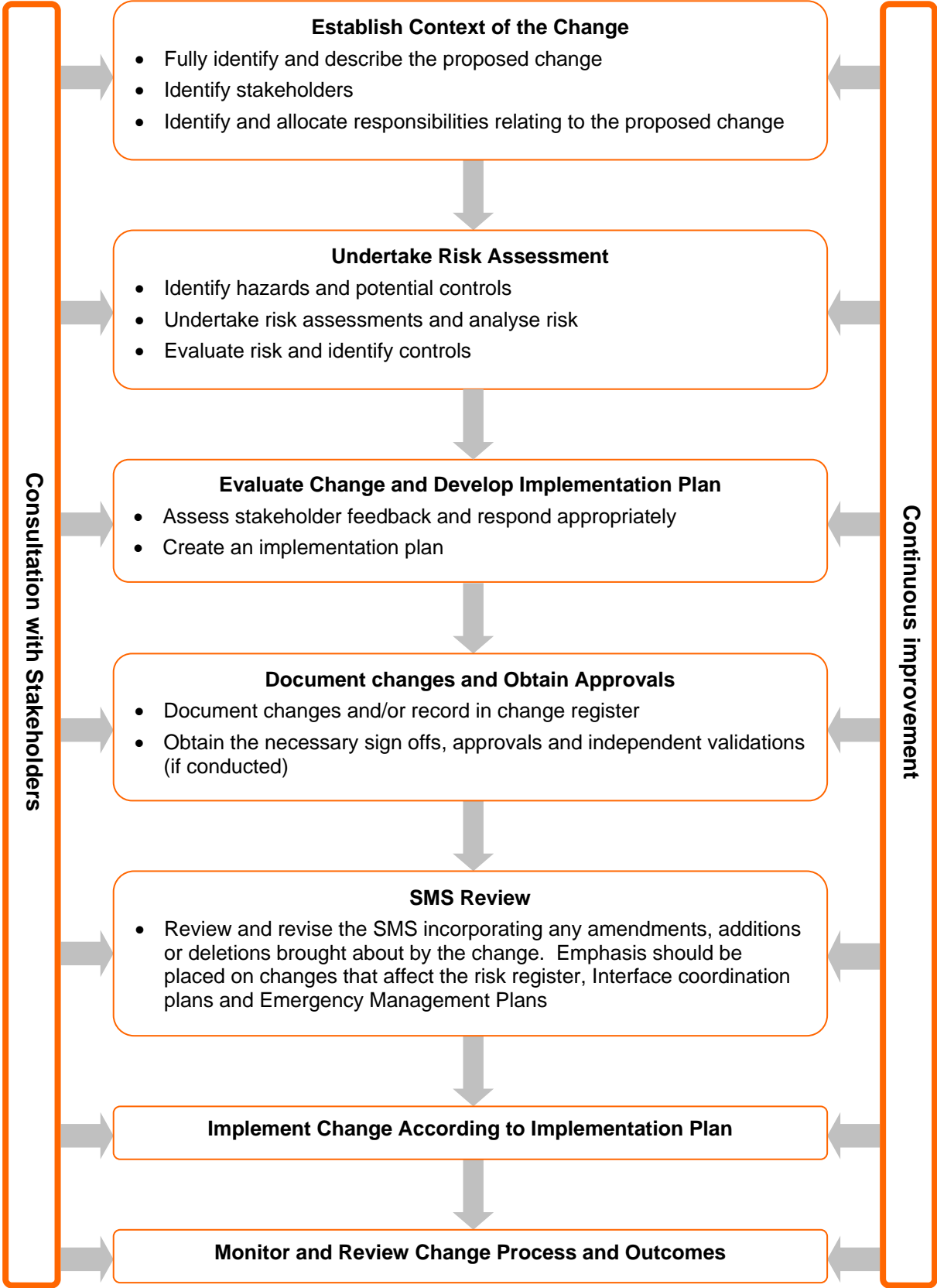
Elements of a consultation plan include but are not limited to the following:

- 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.

2.13.7 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 overleaf.

Figure 2: Management of Change Process



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. 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.

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. 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 the level of safety validation documentation requirements, including whether a project safety plan is required;
- specify whether independent safety validation is required and how that is to be achieved;
- identify the authority responsible for granting or refusing approval for implementation of the change; 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 risk assessment

This step is the actual undertaking of a risk assessment on the proposed change. 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 risk assessments, 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 hazards does not make the overall risk of rail operations intolerable. This may require the implementation of additional controls initially rejected because the benefit was marginally less than the resources to implement them. The legislation 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 change 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, a disposition statement should be prepared indicating what controls have been removed and why, and how the associated risks are to be managed.

STEP 3 Evaluate levels of change and develop implementation plan

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

The implementation plan should address a range of matters including:

- plans for introducing the change including all necessary modifications to the safety management system;
- 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.

STEP 4 Document changes and obtain internal 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 co-ordination plans.

STEP 6 Implementation

Once a change has received the necessary 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 the safety management system.

NM Reg
Schedule 1K

The safety management system must include systems and procedures to ensure that consultation is undertaken before the safety management is reviewed or varied.

Consultation must be undertaken, so far as is reasonably practicable, with

RSB s57(2)

- 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 who carry out railway operations may include contractors, or personnel sourced from labour hire companies. Consultation processes must include opportunities for the participation of these people.

In general, consultation with the public would be considered appropriate where the public may be affected by the review or variation of the safety management system.

Rail safety legislation may vary across jurisdictions to achieve consistency with consultation requirements under occupational health and safety legislation. In some jurisdictions extensive guidance is provided on how to comply with mandatory consultation requirements under occupational health and safety legislation. Occupational health and safety legislation takes precedence over rail safety legislation to the extent of any inconsistency between the two. Compliance with occupational health and safety requirements for consultation would be an appropriate starting point for rail transport operators seeking to comply with consultation requirements under the rail safety legislation.

Rail transport operators are encouraged to seek additional guidance from rail safety and Occupational Health and Safety regulators in their jurisdiction.

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.

NM Reg
Schedule 1L

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;
- ensure, so far as is reasonably practicable, that accurate information is provided to the relevant people in a timely manner; and
- support communication and the dissemination of information throughout, and between all levels of, the operator's railway operations.

The safety management system must also include systems and procedures 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 2.1 Safety Policy).

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 sub-contractors.

NM Reg
Schedule 1L

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 2.5 Safety Culture.

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.

NM Reg
Schedule 1C(3)

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 Risk management

In this section, risk assessment is used to refer to the steps of the risk management process described in AS4360 up to and including risk assessment.

RSB s57(1)
NM Reg Schedule 1M

The safety management system must include systems and procedures for:

- identification and assessment of any risks to safety that have arisen or may arise from the carrying out of any railway operations on, or in relation to, the rail transport operator's rail infrastructure or rolling stock;
- specification of the controls (including audits, expertise, resources and staff) that are to be used by the rail transport operator to manage the risks to safety and to monitor safety in relation to those railway operations; and
- monitoring, reviewing and revising the adequacy of controls.

AS/NZS 4360:2004 Risk Management and the accompanying handbook *HB 436:2004* provide general guidance on risk management processes. The following guidance should be read in conjunction with that standard.

2.16.1 Identification of risks to safety

RSB s57(1)

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.

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.

RSB s57
Regulation Sch 1M(2)

Regulations require 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 rank risks.

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.

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 2.17 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 and 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.

2.16.2 Risk assessment

The requirement for the assessment of risks includes an assessment of the likelihood, likely consequences and ranking of 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 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 also be used to determine if a proposed activity is acceptable in those situations where it is impractical to eliminate or control particular hazards.

In meeting this requirement, judgement is required on selecting the appropriate methodology and depth of analysis, taking into account the nature and scale of the hazards and risks. 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 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 likelihood and consequence measures. 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. 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.

2.16.3 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.

2.16.4 Appropriate assessment methodologies: qualitative, semi-quantitative or quantitative

The rail transport operator should use assessment methodologies (whether quantitative or qualitative) appropriate and proportionate to the risk being considered. Methods of assessment 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 AS/NZS 4360¹. 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.

¹ AS/NZS 4360:2004 Risk Management

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.

2.16.5 Documentation of assessment

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

Reg Sch1 E

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.

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. Indicative examples of risk registers and risk treatment plans can be found in HB 436:2004².

² HB 436:2004 Risk Management Guidelines, companion to AS/NZS 4360:2004.

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

2.16.6 Documentation of risk control measures

RSB 57(1) (d) and (e)

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 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 monitoring and review of risk controls. These elements are likely to be audited by the rail safety regulator 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 or code of practice 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.

2.16.7 Risk register

Sch 1M

The safety management system must include a risk register.

The risk register must include:

Sch 1M

- 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 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.

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.

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 incident, 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 aspect of the risk register is the demonstration of the linking of control measures to the 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.

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, especially those associated with single failures;
- 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.

2.16.8 Prioritising rail safety work

RSB s57(1) (e)

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 as treated does not necessarily mean risk have been reduced SFAIRP.

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.

2.17 Human factors

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.

2.17.1 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.

2.17.2 Integrating human factors into the safety management system

As described in Section 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.

2.17.3 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.

2.17.4 Integrating human factors in risk management

A rail transport operator must have a safety management system that:

RSB s57 (1)

- identifies any risks to safety that have arisen or may arise from the carrying out of railway operations on or in relation to the rail transport operator's rail infrastructure or rolling stock; and
- specifies the controls (including audits, expertise, resources and staff) that are to be used by the rail transport operator to manage risks to safety and monitor safety in relation to those railway operations.

(c)

(d)

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.**

RM Reg
Schedule 1N

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.

2.17.5 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.

2.17.6 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.

2.17.7 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.

2.17.8 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.

2.17.9 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, mis-perceptions 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.

2.17.10 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. The Code of Practice for Rail Safety Investigations and AS4292.7: 2006 Railway Safety Investigation address this.

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).

2.18 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. 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.

RSB s161

As the principal, a rail transport operator must provide, so far as is reasonably practicable, supervision of persons conducting rail safety work and take all reasonably practicable steps to ensure that all contractors performing rail safety work comply with the rail transport operator's safety management system, to the extent that it applies to the work being carried out.

RSB s28

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

RSB s28

Contractors are subject to the safety duty of the rail transport operator for whom they undertake work and must ensure, so far as is reasonably practicable, the safety of the railway operations they undertake, and must comply with the safety management system of the principal to the extent that it applies to the railway operations being undertaken.

RSB s28A and s71

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

RSB s29 and s71

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

NM Reg
Schedule 10

- to ensure that safety duties under the 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.

2.18.1 Precontract activities

The safety management system must include systems and procedures:

NM Reg
Schedule 1O

- 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 of contractors.

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

RSB s161

- 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:

RSB S28, s28A,
Sch1O

- 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.

RSB s28

- 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.

2.18.2 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.

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 sub-contractors 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 sub-contractor as part of the check of the contractor's sub-contractor management.

2.18.3 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.

2.19 General engineering and operational systems safety requirements

The safety management system must include:

- 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. See section 2.9 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.

2.20 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 2.13).

The safety management system must include:

- 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

NM Reg
Schedule 1Q

- 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 2.9 Document control arrangements and information management.

Inspection and testing processes should include links to processes for corrective action as required in section 2.13.

2.21 Asset management

The safety management system must include an asset management policy and processes that address all phases of the asset lifecycle.

Asset management processes should clearly indicate:

- the accountability of line managers for all asset safety up to the level of CEO, (see section 2.6 Governance and Internal Control Arrangements and 2.7 Management, Responsibilities, Accountabilities and Authorities);
- defined serviceability standards (see section 2.20 General Engineering and Operational Systems Safety Requirements); and
- controlled processes (see section 2.21 Process Control).

Further guidance on asset management is available in AS4292 parts 2-4.

2.22 Safety interface coordination

The safety management system must include procedures for:

- the identification of safety risks that may arise from the railway operations by, or on behalf of any other rail transport operator;
- the development and implementation of interface coordination plans to manage the safety risks identified; and
- the maintenance of a register of current interface coordination plans.

2.22.1 Interfaces between rail transport operators

Rail transport operators:

RSB S61

- must 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
- must determine measures to manage, so far as is reasonably practicable, those risks; and
- must, for the purpose of managing those risks, seek to enter into an interface agreement with the other rail transport operator or rail transport operators.

Rolling stock operators are not required to have interface agreements between each other, but the establishment of such agreements is not precluded where safety risks are such that an agreement appears warranted.

2.22.2 Road / rail interface management

Rail infrastructure managers must:

RSB S61A

- identify and assess safety risks associated with road or rail crossings between their railways and any road infrastructure;
- determine measures to manage those risks; and
- seek to enter into 'Interface Agreements' with the relevant road manager.

Managers of public roads must:

RSB S61C

- identify and assess safety risks associated with the existence of any road or rail crossing;
- determine measures to manage those risks; and
- seek to enter into an Interface Agreement with the relevant rail infrastructure manager.

The same obligations apply to the manager of a road other than public road, but only if the relevant rail infrastructure manager advises the road manager of the need for an interface agreement in relation to road or rail crossing(s) that exist between the parties.

RSB S61B and C

2.22.3 Interface agreements

An interface agreement in the context of the legislation, is an agreement in relation to risks that makes provision for:

RSB S7

- implementing and maintaining control measures that are to be used to manage safety risks, 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.

2.22.4 Developing an interface agreement

A rail transport operator must undertake the following steps to develop and implement an interface agreement:

- identify the railway operations to which the agreement is to apply;
- identify the risks to safety identified that may be caused by those operations and assess the risks in conjunction with the other party;
- establish a process to seek an interface agreement with the other party; and
- undertake and pursue the process until there is a written interface agreement between the rail transport operator and the other party.

RSB S61D

It should be noted that:

- the obligations to identify and assess the risks at safety interfaces can be met by the parties identifying and assessing the risks either jointly or separately, or by one party adopting the risk identification and assessment carried out by another;
- the choice of methodologies and approaches to risk management that are to be applied is left to the discretion of the parties who share the interface;

RSB S61E

- there is no limitation on the number of parties to an interface agreement. An agreement can be established between one or more rail transport operators, one or more rail infrastructure managers and one or more road managers; and
- the agreement may consist of two or more documents, and may apply or adopt or incorporate material contained in other documents.

2.22.5 'Approved person' may give directions

RSB S61F

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 can not reach agreement. In this case, the legislation provides for either party to request that the 'appointed person' (which may differ between jurisdictions) take action to address a situation where the appointed person is satisfied that a rail transport operator, rail infrastructure manager or road manager:

- is unreasonably refusing or failing to enter into an interface agreement with another person as required under this Division; or
- is unreasonably delaying the negotiation of such an agreement.

The appointed person has the power to determine the arrangements at the road or rail crossing to which the interface agreement applies.

2.22.6 Register of interface agreement

A rail transport operator must maintain a register of:

RSB S61F

- interface agreements to which it is a party; and
- arrangements (if any) determined by the appointed person that are applicable to its railway operations.

A road manager must maintain a register of:

- interface agreements to which it is a party; and
- arrangements (if any) determined by the appointed person that are applicable to any road in relation to which it is the road manager.

2.23 Management of notifiable occurrences

The safety management system must include systems and procedures for:

NM Reg
Schedule 1T

- the reporting of notifiable occurrences to the rail safety regulator, within the time and manner required, and including all the information required by the rail safety regulator;
- 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.

2.23.1 Notification 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 rail safety regulator or another authority specified by the rail safety regulator.

Notifiable occurrences are classified as either Category A or Category B.

Category A notifiable occurrences must be reported immediately the rail transport operator becomes aware of the occurrence. A written report of the occurrence must be provided to the rail safety regulator within 72 hours of the rail transport operator becoming aware of the occurrence.

In the case of Category B notifiable occurrences a written report must be provided to the rail safety regulator within 72 hours of the rail transport operator becoming aware of the occurrence.

NM Reg
Schedule 1T

NM Reg 27

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 rail safety regulator.

The rail safety regulator may extend the time limit for notification and written reporting of notifiable occurrences. Such an extension of time must be given to the rail transport operator in writing.

Two or more rail transport operators may make a joint report with respect to a notifiable occurrence affecting them.

Category A and B occurrences are defined in the legislation, and are provided in Appendix 2 to this guideline.

The rail safety regulator may impose additional notification requirements for other occurrences or types of occurrence that endanger or could endanger the safety of any railway operations.

Such additional reporting requirements would also be notified to the rail transport operator in writing.

2.23.2 Investigation of occurrences

RSB s74

The rail safety regulator 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.

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 rail safety regulator and within a period specified by the rail safety regulator.

A rail transport operator who has carried out an investigation under this section must report to the rail safety regulator on the investigation within a period specified by the rail safety regulator.

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

Requirements in relation to systems and procedures for the management of the scene of notifiable occurrences and the preservation of evidence is provided by section 2.27 Emergency Management.

AS4292.7: 2006 Railway Safety Investigation and the Code of Practice for Rail Safety Investigations provide detailed guidance for the conduct of rail safety investigations.

2.24 Rail safety worker competence

RSB S68
NM Reg 25
Schedule 1U

The safety management system 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 rail infrastructure or rolling stock has the competence to carry out that work.

A two year transition period has been provided for rail transport operators to ensure the procedures and standards for the competence of the rail safety workers complies with the requirements of the rail safety legislation.

2.24.1 Competence standards

A competence standard or unit of competence is a statement of:

- 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.

Competence standards clustered together describe what a person has to do to achieve a level of qualification.

2.24.2 Recognition by the Australian Quality Training Framework

When assessing the competence of the rail safer worker (or causing to have the rail safety worker's competence assessed) the rail transport operator must make reference to any applicable qualification and/or units of competence recognised under the *Australian Qualification Training Framework*.

RSB S68 (2)

Competence standards and/or qualifications which are recognised by the *Australian Quality Training Framework* have been defined by industry and contain descriptors of workplace outcomes to be achieved and the criteria for performance. Nationally recognised competence standards, qualifications and guidelines for assessing competence are combined to form an industry training package.

Rail safety work is extensively covered by the *Transport and Distribution Training Package* which is developed by the Transport and Logistics Industry Skills Council. The *Transmission Distribution and Rail Training Package* has been developed by the Electro-technology and Utilities Industry Skills Council.

Rail transport operators should note that possession of generic AQTF competencies alone may not be sufficient to satisfy the requirements of the legislation. Rail transport operators must ensure that rail safety workers are competent to under take rail safety work in the specific context in which they will be working.

For example a rail safety worker will need to know about the local safety management system, site specific risks and control measures and so on in order to be able to competently apply the generic competencies acquired through a formal qualification process.

2.24.3 Steps in the management of rail safety worker competence

An appropriate process for the management of rail safety worker competence involves the following steps.

STEP 1 Identification of rail safety work activities

Identification of the scope and limits of rail safety work within the railway operations is likely to involve case by case judgments about whether certain work within the operations, such as customer service or office based administrative roles come within the scope of rail safety work.

STEP 2 Conduct task analysis

This involves breaking down large tasks 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.

STEP 3 Conduct safety task analysis

The competence of the rail safety worker must be assessed against the knowledge and skills that would enable the worker to carry out the rail safety work safely. The safety task analysis should be conducted as part of a risk assessment for the work activity or the broader process of which the work is part. As part of developing controls to the identified risks, identify the competencies required to enable the rail safety worker to safely carry out the tasks involved in the rail safety work. It may be useful to check these competence requirements against the relevant occupational profile to make sure nothing has been overlooked.

STEP 4 Identify existing competence standards

Where Australian Quality Training Framework (AQTF) Units of Competence exist, the legislation requires that they be used.

The *Transport and Distribution Training Package* contains competence standards covering tasks associated with occupations such as station assistants, track installers, terminal operators, shunters and marshalls, locomotive/train drivers, infrastructure maintenance supervisors, logistics managers, inter-modal operators, and station managers.

The *Transmission Distribution and Rail Training Package* contains competence standards and qualifications for tasks in the electro-technology area of the industry such as rail signalling cabling, information and communications.

RSB s68(2)(a)
and (b)

Develop competence standards if none currently exist.

If no Australian Quality Training Framework competence standard or qualification exists, the rail transport operator may develop their own unit of competence (by reference to the knowledge and skills that would enable the rail safety worker to carry out the work safely).

Where a rail transport operator has cause to develop their own unit of competence, the relevant industry skills council is available to assist or may be consulted. Such liaison will help reduce duplication of effort and avoid the creation of a parallel system to the *Australian Quality Training Framework*.

STEP 5 Validate competence standards

Competence standards should be validated against the competence requirements identified for the task prior to use. This is to ensure suitability to your specific working environment / context. Operators using generic *Australian Quality Training Framework* 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.

STEP 6 Establish 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 rail safety legislation.

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 and be available for safety audit by the rail safety regulator.

STEP 7 Source training providers and accredited assessors

Decide how the training assessment of rail safety worker competence will be undertaken. Consider whether these activities will be provided in-house, perhaps using existing resources, or whether an external organisation will be contracted to provide training and assessments.

Training and assessment of *Australian Quality Training Framework* recognised competence standards will need to be undertaken by a Registered Training Organisation and an Accredited Assessor respectively. The *Australian Quality Training Framework* provides the quality assurance arrangements for training delivery, assessment and issuing of qualifications.

The standards for training and assessment within the *Australian Quality Training Framework* are specified within the respective Training Packages and/or in the *Australian Quality Training Framework Assessment Guidelines*.

A rail transport operator may decide to engage the services of an external registered training organisation or apply to become registered itself as a registered training organisation. It is also possible to form a partnership for assessment purposes, where one person who holds the assessor competencies works with one or more persons who hold the vocational/industry competencies. This may be of benefit to rail transport operators where training has required specialised expertise or in tourist or heritage railways where there may be a scarcity of operators who are knowledgeable about obsolete plant and equipment.

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. These arrangements could provide remote access to study and support materials with assessment of competence provided by a mix of the education provider and 'in house' expertise for practical on-the-job assessment.

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 *Australian Quality Training Framework* units of competence. 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 any assessment of competency is conducted by an accredited assessor with the appropriate scope of registration for the units of competence being assessed.

When choosing the option for internal assessors, rail transport operator should consider the need for impartiality on the part of assessors.

STEP 8 Undertake training and assess rail safety worker competence

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.
- 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;
- identify any gaps in the rail safety worker's training or competence levels;
- provide training to address competence gaps;
- establish a schedule for continuation training and assessment.

2.24.4 Rail Safety Worker Identification

The safety management system must also 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.

RSB s68
NM Reg 25
Schedule 1U

2.24.5 Records of competence

The safety management system must include procedures to ensure that records of rail safety worker competence are maintained. These procedures must include details of all of the following:

- 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 re-training; and
- the name and qualifications of the person who assessed the competence of the rail safety worker.

Training and competence records should be in a readily accessible form that enables the rail transport operator or the rail safety regulator to verify the competence of rail safety workers undertaking rail safety work.

2.24.6 System verification

RSB s57(1)(e)
NM Reg 25
Schedule 1U

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

2.25 Security management

RSB S62
NM Reg 15
Schedule 1V

NSW Act:S21

The safety management system must include:

- 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 a security incident occurs.

2.25.1 The security management plan

RSB S63 NM Reg 17
Schedule 1W

The security management plan must include all of the following:

- 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;
- provision for the evaluation, testing and if necessary, the revision, of security measures and procedures.

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

2.26 Emergency management

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.

2.26.1 *Development of the emergency management plan*

The emergency management plan must be prepared in conjunction with emergency services.

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:

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

2.26.2 *The emergency management plan*

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

- 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;

RSB S63
NM Reg 16
Schedule 1W
NSW Act:S22

- 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.

2.26.3 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:

- provided with information 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:

- 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.

2.26.4 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.

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.

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.

2.27 Fatigue

The safety management system must include systems and procedures for the preparation and implementation of a program for the management of fatigue of rail safety workers who carry out railway operations in relation to the rail transport operator's rail infrastructure or rolling stock.

The fatigue management program should be developed with regard to the detailed guidance provided by the *National Guideline for Management of Fatigue in Rail Safety Workers*³ available on the website of the National Transport Commission.

³ This guideline may not yet be promulgated by the NTC. In the interim, rail transport operators should seek further information from the rail safety regulator in their jurisdiction.

RSB S67
NM Reg 24 reserved
Schedule 1X

2.28 Drugs and alcohol

Rail transport operators have a duty to ensure the safety of their railway operations, so far as is reasonably practicable, and to ensure that rail safety workers do not carry out rail safety work while more than the relevant concentration of alcohol is present in their blood or breath or while impaired by a drug.

The detail of regulatory requirements in relation to alcohol and drug management programs and testing for the presence of alcohol and drugs vary across jurisdictions. Separate guidance on these matters is available from the rail safety regulator in your jurisdiction.

RSB S28

RSB S65 S66
NM Reg 22 and 23
Schedule 1 Y

2.29 Health and fitness

The safety management system must include a program for the management of health and fitness for rail safety workers.

The health and fitness program must comply, so far as is reasonably practicable, with the *National Standard for Health Assessment of Rail Safety Workers*, published by the National Transport Commission, as amended from time to time.

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.

RSB S28

RSB S64, Regulation 21
and Schedule 1 Z

2.30 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 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 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 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 3 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 rail safety legislation come together to form the safety management system, and how accredited rail transport operators might go about establishing these systems to meet their 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.
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 rail safety legislation, including the implementation of a safety management system, apply only to railway operations for which rail accreditation is held.

Railway operations are defined as:

- a. the construction of a railway, railway tracks and associated track structures or rolling stock;
- b. the management, commissioning, maintenance, repair, modification, installation, operation or decommissioning of rail infrastructure;
- c. the commissioning, maintenance, repair, modification or decommissioning of rolling stock;
- d. 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);
- e. the movement, or causing the movement, of rolling stock for the purposes of operating a railway service.

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

In the case of an applicant 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.

SMS 2.12

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.

NM Reg Schedule 1A
SMS s2.1, s2.2 and s2.3
SMS s2.1
SMS s2.19

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.

SMS s2.4

Section 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 is used to refer to the steps of the risk management process described in AS4360 up to and including risk assessment.

SMS s2.14

SMS s 2.15

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 (risk 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.

SMS 2.8

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.

SFAIRP Guidance

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*

Rail safety legislation 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 legislation 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 *National Guideline for the Requirements of a Rail Safety Management System*. 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.

3.10 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.

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 Occupational Health and Safety (OHS) legislation. Rail safety legislation adds to the protection provided by OHS legislation and both sets of legislation apply to rail transport operators. If there is a conflict between a provision of rail safety legislation and OHS legislation, the OHS requirements take precedence.

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.

Appendix 1: Notification of change requirements

Model Rail Safety Regulations 2006, subclause 6(c) – Prescribed conditions of, or restrictions on, accreditation:

The operator must notify the rail safety regulator in writing of any of the proposed decisions, proposed events or changes listed in column 2 of the table in accordance with the requirement specified in column 3 of the table with respect of that item:

Item	Decision, event or change	When notification must be given
1	A decision to design or construct, or to commission the design or construction of, rolling stock or new railway tracks.	As soon as is reasonably practicable after the decision is made.
2	The introduction into service of rolling stock of a type not previously operated by the operator, or the re-introduction into service of rolling stock not currently operated by the operator.	At least 28 days before the date the operator intends to introduce or re-introduce the rolling stock into service.
3	A change to a safety critical element of existing rolling stock.	At least 28 days before the date the operator intends to bring the change into operation.
4	A change to one or more of the classes of rail infrastructure used in the operator's accredited operations.	At least 28 days before the date the operator intends to introduce the new class of rail infrastructure into service.
5	A change to a safety standard for the design of rail infrastructure or rolling stock.	At least 28 days before the date the operator intends to adopt the change.
6	The decision to adopt a new safety standard for the design of rail infrastructure or rolling stock.	At least 28 days before the date the operator intends to adopt the new standard.
7	A change to the frequency or procedures for the inspection or maintenance of railway infrastructure or rolling stock.	At least 28 days before the date the operator intends to bring the change into effect.
8	A change to any safeworking system rule or procedure relating to the conduct of the railway operator's railway operations.	At least 28 days before the date the operator intends to bring the change into effect.
9	A decision to introduce a new safeworking system rule or procedure relating to the conduct of the operator's railway operations.	As soon as is reasonably practicable after the decision is made.
10	The replacement of the person nominated in the safety management system as the contact person for dealing with queries in relation to the safety management system of the operator with another person.	As soon as is reasonably practicable after it is known that the replacement will occur.

Appendix 2: Notification of occurrences

Model Rail Safety Regulations 2006, clause 27 – Reporting of notifiable occurrences

1. For the purposes of this regulation –

- (a) A Category A notifiable occurrence is any of the following notifiable occurrences –
- (i) An accident or incident that has caused death, serious injury or significant property damage;
 - (ii) A running line derailment;
 - (iii) A running line collision between rolling stock;
 - (iv) A collision at a road or pedestrian level crossing between rolling stock and either a road vehicle or a person;
 - (v) A fire or explosion on or in rail infrastructure or rolling stock that affects the safety of railway operations or that endangers one or more people;
 - (vi) A suspected terrorist attack;
 - (vii) Any accident or incident involving a significant failure of a safety management system that could have caused a death, serious injury or significant property damage;
 - (viii) Any other accident or incident that is likely to generate intense public interest or concern;
- (b) A Category B notifiable occurrence is any of the following notifiable occurrences, unless that occurrence is also a Category A notifiable occurrence –
- (i) A derailment other than a running line derailment;
 - (ii) Any collision involving rolling stock, other than a collision described in paragraph (a)(iii) or (a)(iv);
 - (iii) Any incident at a road or pedestrian level crossing, other than a collision described in paragraph (a)(iv);
 - (iii) The passing of a stop signal, or signal with no indication, by rolling stock without authority;
 - (iv) Any accident or incident where rolling stock exceeds the limits of authorised movement given in a proceed authority;
 - (v) Any failure of a signalling or communications system that endangers, or that has the potential to endanger, the safe operation of trains or the safety of people, or to cause damage to adjoining property;
 - (vi) Any slip, trip or fall by a person on railway property, or any person being caught in the door of any rolling stock;
 - (vii) Any situation where a load affects, or could affect, the safe passage of trains or the safety of people, or cause damage to adjoining property;
 - (viii) Any accident or incident involving dangerous goods that affects, or could affect the safety of railway operations or the safety of people, or cause damage to property;
 - (ix) Any breach of a safe working system or procedure, or the detection of any irregularity or deficiency in such a system or procedure;

- (x) *The detection of any irregularity in any rail infrastructure (including electrical infrastructure) that could affect the safety of railway operations or the safety of people;*
- (xi) *The detection of any irregularity in any rolling stock that could affect train integrity or the safety of people, or cause damage to the rolling stock;*
- (xii) *Any fire or explosion that causes damage to rail infrastructure or rolling stock, or both, or that causes the disruption or closure of a railway (even if the closure is only a precautionary measure);*
- (xiii) *Any incident on railway property where a person inflicts, or is alleged to have inflicted, an injury on another person;*
- (xiv) *A suspected attempt to suicide;*
- (xv) *The notification that a rail safety worker employed by a rail transport operator has returned a result to a test designed to determine the concentration of alcohol or drugs in a sample of blood or urine that suggests that the worker was in breach of a relevant safety requirement concerning the use of alcohol or drugs at a relevant time*
- (xvi) *[This subclause is subject to variation across jurisdictions. Further information can be provided by the local rail safety regulator.]*
- (xii) *The infliction of any wilful or unlawful damage to, or the defacement of, any rail infrastructure or rolling stock that could affect the safety of railway operations or the safety of people;*
- (xiii) *A corridor security incident that affects the safety of railway operations.*

Appendix 3: References and resources

Rail Safety Legislation

New South Wales:	www.legislation.nsw.gov.au
South Australia:	www.parliament.sa.gov.au
Western Australia:	www.slp.wa.gov.au
Tasmania:	www.thelaw.tas.gov.au
Northern Territory:	www.nt.gov.au
Queensland:	www.legislation.qld.gov.au
Victoria:	www.legislation.dpc.vic.gov.au

Australian Standards

The following standards and supporting documents are possible sources of information for rail transport operators seeking information in relation to management systems, risk management and related fields. The list is not exhaustive.

HB 139:2003 – Guidance on Integrating the Requirements of Quality, Environment, and Health and Safety Management System Standards

AS 3806: 2006 – Compliance Programs

AS IEC 60300.2:2005 Dependability Management

AS/NZS 4360: 2004 Risk Management

HB 436:2004 Guidelines to AS/NZS 4360:2004

HB 240:2004 Guidelines for Managing Risk in Outsourcing Utilising the AS/NZS 4360:2004 Process

HB 254:2005 Governance, risk management and control assurance.

AS/NZS 4581:1999 Management System Integration – Guidance to Business, Government and Community Organisations

AS 4801:2001 Occupational Health and Safety Management Systems – Specifications with Guidance for Use

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

AS 4804:2001 Occupational Health and Safety Management Systems – General Guidelines on Principles, Systems and Supporting Techniques

AS 5037:2005 Knowledge Management – a guide

AS 8000:2003 Corporate Governance – Good Governance Principles

AS 8000:2003/Amdt 2004

AS 8002:2003 Corporate Governance – Organisational Codes of Conduct

AS/NZS ISO 9001:2000 Quality Management Systems – Requirements

AS15489.1:2002 Records Management General

AS15489.2:2002 Records Management Guidelines

AS/NZS ISO 19011:2003 Guidelines for quality and/or environmental management systems auditing

HB 401:2004 Applications of Corporate Governance

HB 408:2006 Corporate Governance Culture

Other useful sources of information

OHS Consultation Code of Practice (NSW) available from WorkCover NSW
www.workcover.nsw.gov.au

Appendix 4: Rail safety regulator contacts

Answers to specific queries about the legislation relevant to a particular State or Territory can be obtained directly from the relevant rail safety regulator.

New South Wales: Independent Transport Safety and Reliability Regulator.

<http://www.transportregulator.nsw.gov.au/>

Northern Territory: Department of Planning and Infrastructure, Rail Safety

transport.dpi@nt.gov.au

Queensland: Queensland Transport

<http://www.transport.qld.gov.au/Home/Safety/Rail/>

South Australia: Department for Transport, Energy & Infrastructure

<http://www.transport.sa.gov.au/safety/rail/>

Tasmania: Department of Infrastructure, Energy & Resources

<http://www.dier.tas.gov.au/>

Victoria: Public Transport Safety Victoria

[http://www.doi.vic.gov.au/doi/internet/vehicles.nsf/headingpagesdisplay/
public+transport+safety+vic](http://www.doi.vic.gov.au/doi/internet/vehicles.nsf/headingpagesdisplay/public+transport+safety+vic)

Western Australia: Department for Planning & Infrastructure

<http://www.dpi.wa.gov.au/>

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Alex Rae	Department of Infrastructure, Planning and Environment, NT
John Hartigan	Department of Infrastructure, VIC
Julie Bullas	Queensland Transport, QLD and Rail Safety Regulators' Panel
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