JUNE **2008**

National Rail Safety Guideline

Meaning of Duty to Ensure Safety *So Far As Is Reasonably Practicable*

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.

ISBN 1 921168 80 3

NTC AUSTRALIA
National Transport Commission

Rail Safety Regulators' Panel

Meaning of Duty to Ensure Safety *So Far As Is Reasonably Practicable*

ISBN: 1 921168 80 3

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

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.

Acknowledgements

The NTC and Rail Safety Regulators Panel (RSRP) would like to thank the members of the Rail Safety Package Steering Committee for their guidance and advice during the development of this guideline. Appreciation is also extended to those who made contributions during the public comment period. In particular, the NTC and RSRP acknowledges the contributions of Peter Burns, Simon Meiers, Andrew Kitto and members of the reference group involved in the development of this guideline. Finally, the work of the NTC officers Paul Salter and Jan Powning is acknowledged.

Contents

1. Introduction

1.1 Purpose

Section 28 and 29 of the model *Rail Safety Bill* identify that rail organisations and associated industry participants (contractors, manufacturers, designers and suppliers) have an obligation to ensure the safety of their 'railway operations' (irrespective of where these operations are conducted). These statutory duties do not require safety at any cost. Duties to 'ensure' are qualified by the statement 'so far as is reasonably practicable' (SFAIRP).

The purpose of this guideline is to explain the risk management obligations implied by this duty and provide guidance on how to develop and implement a suitable decision making framework that will enable compliance with these obligations. In particular the document aims to provide guidance on how to determine what is reasonable practicable given the multitude of situations and contexts in which a rail organisation might be operating.

It should be noted that the safety duties established in the model Rail Safety Bill are not new. Duties already exist in Occupational Health and Safety (OHS) legislation. The National Accreditation Package (NAP) has also required accredited rail organisations to be able to demonstrate that they have identified all reasonably foreseeable safety risks relevant to their operations, and that these risks are managed effectively within the bounds of what is 'reasonably practicable'. In addition, many engineering standards and guidelines applicable to risk management (e.g. AS4360) or the Australian rail industry (e.g. AS4292) refer to a standard of reducing risk to as low as 'reasonably practicable'. Thus, the rail industry is familiar with the undertaking of risk management and the concept of reducing eliminating risk or reducing risk by doing everything that is 'reasonably practicable'.

The content of this guideline is relevant to staff with management responsibilities for safety.

1.2 Content and status

SFAIRP is a legislative qualification that is well known to the law and found in a number of statutes both in Australia and overseas. In essence, it requires weighing the risk against the resources needed to eliminate or reduce the risk. It does not require every possible measure to be implemented to eliminate or reduce risk, but it places the onus on the person holding the duty to demonstrate (or be in a position to demonstrate) that the cost of additional measures to control the risk (over and above those risk controls already in place) would be grossly disproportionate to the benefit of the risk reduction associated with the implementation of the additional risk control.

The SFAIRP qualification is either included in the formulation of the obligation (the wording of the duty itself), or is indicated in the primary Act as an acceptable defence to a prosecution under the Act.

Irrespective of the means by which the qualification is added, the effect is still the same: the level of safety the duty holder must provide hinges on what is 'reasonably practicable' given the situation and context.

This guideline is not intended to be a step by step 'how to' guide, but provides a framework for an approach to identifying and controlling risk, and therefore meeting the statutory duties.

It is presented in two parts:

- Part A defines concepts and points to consider when developing and implementing a decision making framework within a rail organisation.
- Part B provides guidance on how to determine what is reasonably practicable with reference to case law and relevant regulatory theory.

The guideline accompanies and is complementary to the model *Rail Safety Bill 2006* and model *Rail Safety Regulations 2006*. It is intended for general application across the rail industry in all jurisdictions of Australia.

The guideline is a guide only. The advice provided in this document is not intended to replace the provisions of rail safety legislation, regulations or other relevant legislation or to limit or expand the scope of such legislation. In the event of any perceived inconsistency between this guideline and relevant legislation, the legislation will prevail.

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.

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 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 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 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 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 for 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*.

2. SFAIRP in the Context of Risk Management

2.1 Relationship between risk management and rail safety regulation

The rail safety regulatory regime is focused on encouraging and enforcing good risk management practice by rail organisations and associated industry participants. Legislation and regulations do not prescribe how rail safety risks are to be controlled, but rather establish performance obligations (safety duties) and more specific process requirements that force rail organisations to identify risks and consider the merits of available risk controls and elimination measures. Of prime importance to the effectiveness of this approach is the risk management process and the integration of that process into the effective functioning of the safety management system.

The risk management process, at the highest level, has four essential steps. At each step, consultation with affected parties is necessary for risk management to be effective.

The tests and judgements involved in determining what is reasonably practicable are made as part of the risk management process.

Experience arising from OHS prosecutions suggests that one of the most common reasons why duty holders fail to meet their safety duties is that they do not take sufficient action to identify risks; or otherwise know about the risks but take no action. It is therefore important to get the basics of the risk management process right and follow through with necessary actions.

The concept of risk management, and the importance of the risk management process, is embedded in the model *Rail Safety Bill*.

As a means of ensuring safety, a rail transport operator is required to have a Safety Management System (SMS) for its railway operations. Clause 57 of the Bill requires the safety management systems of rail transport operators to:

- identify and assess any risks to safety that have arisen or may arise from the carrying out of the railway operations;
- specify the controls that are to be used by the rail transport operator to manage the risks to safety and to monitor the risks to safety in relation to its railway operations; and
- include procedures for monitoring, reviewing and revising the adequacy of those controls.

As can be seen, these requirements are consistent with the five (5) step risk management process depicted in Table 1.

Table 1. Steps in generic risk management process

Step 1: Establish the Context	**This step is the essential starting point for satisfying your safety duty. You need to define what it is you are applying the process to and what interfaces you may have with other operations. Also decide the criteria against which risk is to be evaluated.**
Step 2: Risk Identification	You need to establish what risks are present in respect to your proposed railway operations. Many risks are well known and can be immediately tackled by equally well established ways of eliminating or reducing them. Other risks are not well known and may require some foresight and careful consideration.
Step 3: Analyse Risks	You need to understand the nature of the risks and the level of the risk before taking action. Understanding the nature of the risk means working out what could happen and why and what existing controls you may have in place. The risk assessment step is a way of estimating the level of risk.
Step 4: Evaluate and Treat Risks	Here decisions are made, based on the outcomes of risk analysis, about which risks need treatment (improved controls) and treatment priorities. Risk treatment involves identifying the range of options for additional controls for treating risks, assessing these options to determine if they are reasonably practicable and the preparation and implementation of treatment plans.
Step 5: Check Controls	Effective risk management requires not only that your risks be controlled but that they are checked to see if they are operating effectively and that circumstances have remained constant.

The combination of the performance obligation (safety duty) and the process requirements established in the model Bill obliges rail transport operators to practice good risk management. Additional safety management system requirements included in the model Bill and included in the model *Rail Safety Regulations* require consideration of known areas of risk, or otherwise provide imperative to consider the applicability of known means of risk control. However, the Bill and the Regulations do not prescribe risk management methods or procedures. The rationale is that risk assessment methods need to be tailored to the cultures, systems and risk conditions that exist in individual rail organisations in order to be truly effective. In recognition of this, the intent of the model Bill is to make rail organisations responsible for interpreting legislative requirements into specific methods and criteria, and then applying these as part of their risk management process.

Some characteristics that define a good risk management process are provided in Table 2. The table provides good guidance to duty holders about what they need to consider when developing their own risk management process, tailored to their own cultures, systems and risk conditions.

Table 2. Characteristics of a good risk management process

Characteristic	Description
1. Definition of scope and context	A clear definition of the scope and context of the system under analysis needs to be made. This must include what interfaces and stakeholders are involved.
2. Consultation and involvement of stakeholders	The risk management process needs to include consultation with and involvement of a full range of affected parties, including those at interfaces.
3. Process for risk identification	A process ensuring a comprehensive identification of hazards, hazard events, and their potential outcomes is an essential starting point for the risk management process. Existing controls are also identified. The requirement for risk identification should not be limited to significant hazards, as this prejudges the risk assessment process.
4. Proportional process for risk analysis	The process for determining the likelihood and consequence of risks associated with identified hazards (including those with any existing risk controls) needs to be systematic, objective and proportional to the significance of the risks under analysis (which may require a multi-step process). Proportionality is implicit in managing a risk adequately. Regard should be had to factors including (but not limited to): • the depth and strength of analysis undertaken by duty holder should match risk or significance of operation / change in question (scale of activity, complex functionality); • technical difficulty (inherent difficulty or unfamiliar / novel activity); and • organisational factors (size and complexity of organisation, number of contractors). Formal safety studies (eg Fire Safety Analysis, Human Factors Analysis, Emergency Evacuation Analysis etc) should be performed for significant risks. The over-riding imperative is that the risk assessment process must be 'suitable and sufficient' to identify and adequately assess foreseeable risks, as the obligation to reduce a risk, SFAIRP is not avoided by having failed to identify the risk or to properly assess it.

Table 2. Characteristics of a good risk management process (cont)

Characteristic	Description
5. Process for evaluation and treatment of risk	Risks need to be evaluated against suitable criteria and treated accordingly to ensure residual risks are reduced SFAIRP. This needs to involve a process of considering what additional controls are available and justification of their adoption or rejection taking into account what is reasonably practicable. Processes also need to cover the preparation and implementation of treatment plans. The following sections of this guideline expand on what is needed to support justified decision making.
6. Consideration of Uncertainty	Risk assessments are fraught with uncertainties. This needs to be recognised and both assumptions and uncertainties identified and tested.
7. Priority of risks	Risks need to be ranked in order to establish a priority for treatment. The risk management approach should not go so far as to exclusively require risks to be treated in order of ranking as to do so may inflate costs unreasonably. It should be recognised that not treating a risk because a higher priority risk was treated does not necessarily mean risks have been reduced SFAIRP.
8. Linked risk assessment to SMS, with measurable performance indicators	Controls identified in the risk management process need to be linked to safety management activities within the safety management system to ensure their ongoing effectiveness. The safety management system (and the risk management process that forms part of it) needs to include: • tests for the effectiveness of controls; • indicators of control failure; • procedures for reporting control failure; and • procedures for responding to control failure.

2.2 Justified decision making

It is the duty holder's responsibility to develop and apply risk assessment methods and decision making frameworks that enable it to comply with the model *Rail Safety Bill* and other relevant legislation (e.g. OHS). What is suitable and sufficient for one duty holder may not be so for another. Importantly, the obligation to ensure safety, SFAIRP, is not avoided by having failed to identify the risk or to properly assess it.

The risk management process is central to the operation of the duty holder's safety management system and the fulfilment of the safety duty. It is important to acknowledge that the end outcomes of the risk management process are decisions, which need to be given effect. Some characteristics of a good decision making framework are articulated in Table 3.

What is reasonable is as much about the process by which you reach your decision as the decision itself. The decision making process, in a generic sense, can be seen to parallel the risk management process via four steps as explained in the following sections.

Table 3. Characteristics of a good decision making framework

Accountability	The person or persons responsible for making the decisions know that they are responsible and are known by others to be responsible for making the decision(s).
Decisions made by those with best information and knowledge	It is important that the decision making framework allows the decision to be taken at the correct level in the organisation. This may require responsibility for a safety decision resting with operational units, whose personnel are best able to obtain and assess the evidence on which the decision should be based, or it may require escalation of approval to more senior management with the authority to enforce the decision taken.
Consultation	There needs to be adequate engagement with all those who are affected by the decision, or who have a contribution to make to it. The level of consultation needs to be proportionate to the nature of the decision being taken (novel/complex versus operational).
Decision criteria and decision making process specified and transparent	The criteria applicable to decision making and the process by which decisions are to be made need to be transparent and known from the outset to ensure that the process of assessment and evaluation remain objective and systematic. This is an important protection against the 'goal posts moving' in order to get the answer that is convenient or most advantageous from a narrow commercial perspective.
Scope to apply a range of methods to assessment and evaluation process	In most cases the comparison of safety benefits of a risk reducing measure and the costs of its implementation can be performed through direct judgement by stakeholders. However for wide reaching, expensive and subtle risk reduction measures, such as the introduction of a standard or additional technology a direct judgement technique is very difficult to justify. In such circumstances, social cost benefit analysis and other techniques may need to be applied.
Record keeping	Decisions that affect safety must be taken and the reasons for the decision must be recorded. Failure to take any decision is itself a decision that needs to be able to be defended in the future. It should be noted that the correct course of action may be to decide to take no action, but again the reasons for coming to that decision should be recorded. In all cases, both the actual decision and the way that it was reached should be able to be examined subsequently.

2.3 Decision making steps

2.3.1 Step 1. Scoping the decision

First the decision must be scoped. This involves considering what type of decision has to be taken. Some considerations that need to be made include:

- Is it an immediate operational decision or more of a managerial decision?
- Who is responsible for taking the decision?
- Will in-depth analysis be needed to support the decision?

This step of the decision making process aligns with the risk management steps of setting the scope and context (step1) risk identification (step 2) and risk analysis (step 3). The answers to the questions listed above (and others that are relevant at this stage) flow naturally from the identification of the risk and the assessment of it nature and significance.

Some risks are well known and may be the subject of regulations to which compliance is required. Accordingly, the decision to be made is simply to make the changes that are required to the duty holder's safety management system such that it is compliant with the regulations. In other situations, the risks that have been identified are more novel or situation-specific, requiring a more iterative process of assessment and consideration.

The question of what level the decision can be taken at, and ultimately the question of who is responsible for making the decision, is a function of the duty holder's organisational structure and how that structure has evolved to enable it to meet commercial objectives and comply with statutory requirements. In demonstrating that a justified decision making system is effective it must be able to be shown that there are logical inter-relationships between the decision making framework and the organisational hierarchy and structure. Ideally, the inter-relationship between the organisational hierarchy and the decision making framework should enable those with the best information and knowledge to make the decision.

This structural approach to effective risk management and decision making needs to be supplemented by the commitment to, and practice of, consultation with those who are affected by the decision, or who have a contribution to make to it.

2.3.2 Step 2. Analysis of the options

In those situations where an identified risk does not have a corresponding risk control that is prescribed in regulations, further assessment is needed to determine what is reasonably practicable. Having made the best possible assessment of consequences and likelihood, there needs to be an assessment of which options address the identified risk or combination of risks.

The corresponding costs and benefits of the different options then need to be assessed. This step parallels step 3 in the generic risk management process.

Method of analysis

Figure 1 (sourced from RSSB 2006) highlights a range of methods that may be applied to provide input to the decision taking process. The diagram is wedge shaped to indicate that increasing problem complexity requires more resource to be allocated to the process of decision making. It provides a structured checklist of approaches that can be applied to obtain useful information with which to inform the decision. The methods are as follows.

Existing good practice

Existing good practice provides effective, easily accessible information about what measures in an organisation are likely to be sensible and effective. All organisations, as a minimum, must implement authoritative good practice, irrespective of situation-based risk estimates. This requirement flows from the observation that good practice is inherently 'reasonable' and clearly 'practicable'. In short, 'good practice' is a threshold, something that is necessary but not always sufficient to ensure safety, SFAIRP.

Quantitative analysis/qualitative analysis

According to the obligation to ensure safety, SFAIRP, the amount of risk reduction achieved by the introduction of a control must be assessed and balanced against costs to implement the control. This implies some form of social cost benefit analysis that permits a systematic and objective comparison of benefits and costs. Depending on the size and complexity of the problem this form of analysis can be undertaken as a brief qualitative assessment or as a more detailed quantitative analysis.

Strategic analysis

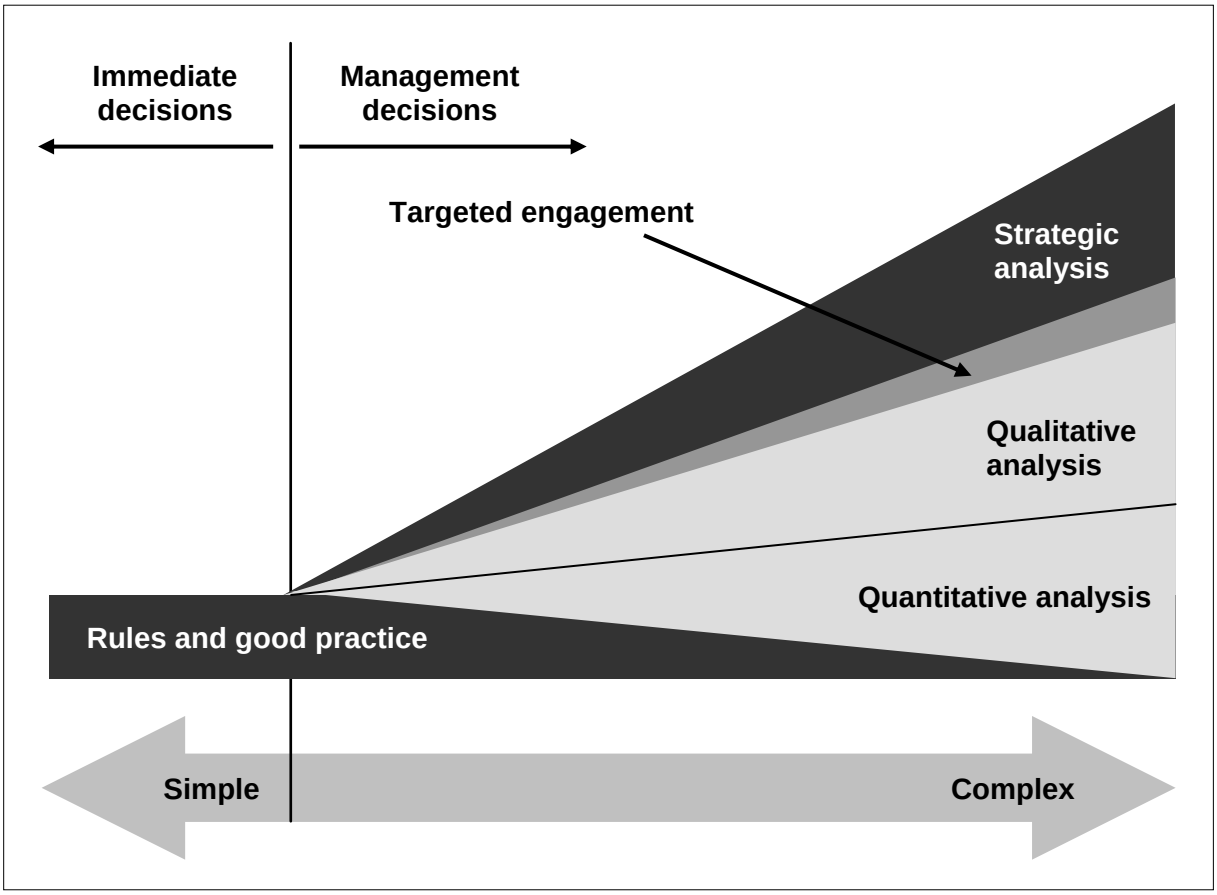
In some instances decisions will have strategic effects that need to be taken into account. Decision taking is not an academic exercise, and real strategic difficulties associated with the decision need to be considered, such as the practical ability of the organisation to implement any change and the commercial interests of the company.

Targeted engagement

To make good decisions, companies must engage with those who fund the railway, those who work within the railway and those who regulate the industry.

It is necessary at this stage in the decision making process to make a professional judgement as to the method of analysis that is to be adopted and the time and resources that are to be applied to the making of the decision. For the decision making process itself to remain 'justified', this judgement needs to be defendable. This implies that considerations of the above options should be made carefully and that records pertaining to this judgement should be kept.

Figure 1. Range of inputs to decision making



Control options

The risk assessment process provides the basis for identifying suitable risk control options at the 'highest level of protection' as is reasonably practicable.

The conventional way of describing what is meant by the highest level of protection is the concept of the hierarchy of control. The principle behind the hierarchy of control is that risk controls that are dependent on individual behaviour are less reliable and durable than risk controls that engineer or design out risks.

The first question that needs to be asked is whether the risk can be removed or otherwise eliminated. In some cases this can be achieved by using different equipment or technology or changing the way operations are undertaken. Where elimination is not reasonably practicable, the assessment of the control options has to take into account the nature and level of risk.

In controlling the risk, one or more of the following measures should be taken 9in the order specified) to minimise the risk to the lowest level reasonably practicable:

- Substituting the hazard giving rise to the risk with a hazard that gives rise to a lesser risk.
- Isolating the hazard from the person put at risk.
- *Minimising the risk by engineering means.*

- *Minimising the risk by administrative means (for example, by adopting safe working practices or providing appropriate training, instruction or information).*
- *Using personal protective equipment.*

As you descend the hierarchy of controls the likelihood of the risk being eliminated or reduced becomes far less. Elimination of the hazard, or substitution of some other process or substance, may leave no hazard remaining to give rise to risk. Isolation and engineering controls remove or minimise the chance or extent of exposure, but not entirely. Administrative controls are less certain to be effective as they may be affected by the skills, attitudes or knowledge of the individuals interpreting them or following them. Personal protective equipment will only be effective when worn properly or used, and even then only to protect the individual wearing or using it and no others (Sheriff, 2005).

In most cases a combination of measures will be required. While personal protective equipment is the lowest level of protection it may still be required in combination with other measures such as engineering controls. A rail organisation should accordingly consider the hierarchy of controls as options and not as alternatives, to be used in the combination that will produce the level of risk elimination or control that is reasonably practicable. In determining what is reasonably practicable, the key choice is often the additional control measure that is to be added to the combination of control measures that are already regarded as being good practice.

Knowing, or being aware of what constitutes good practice is obviously a pre-condition to being able to identify control options effectively. As stated previously, good practice is a threshold, something that is necessary but not always sufficient to ensure safety, SFAIRP. The safety duties require the duty holder to consider the application of risk elimination or control measures that the duty holder knows of, or ought to reasonably know of. The latter part of this statement is important because it implies that the duty holder needs to devote a reasonable amount of resources to identifying and being aware of elimination and risk control measures. Again this is a point in the decision making process where a judgement needs to be made, specifically about how much effort should be taken. As such, records of the judgement made and the reasons underlying it should be kept.

2.3.3 Step 3. Making the decision

Once a decision has been scoped and analysis undertaken, the decision maker is in a position to take the decision. This step parallels step 3 in the generic risk management process: what risk controls should be applied?

There are two inevitable truths about the taking of decisions. The first is that there is no such thing as a pure safety decision. The decision will need to take appropriate account of cost, performance and safety. The second is that there is always an amount of judgement that needs to be applied.

As previously indicated, risk assessments are fraught with uncertainties. Assumptions should be identified and tested but it needs to be accepted that some uncertainties will remain.

For these reasons the determination of what is 'reasonably practicable' can never be a simple formulae that the decision maker calculates by inputting values for known variables. The 'comfort' of the individual decision maker is borne from adhering to the decision making process and applying the relevant criteria (see Part B for '5 tests') in an appropriate way. There are no guarantees that a court will agree with your determination of what is or was 'reasonably practicable' in a given situation, however, it is far more probable the court will agree if a process of justified decision making is adhered to.

The overriding requirement from a commercial and safety perspective is to take decisions, even if this means explicitly deciding to do nothing and recording the reasons why. Such decision making practices go some way to fulfilling the statutory duty and can be clearly differentiated from simply letting things happen by default.

2.3.4 Step 4. Reviewing the decision

Does the decision make sense? The decision maker should consider whether they would feel comfortable explaining the decision, were an accident subsequently to occur. What were the reasons for taking the decision? Does it give due regards to the interests of all affected parties?

This step makes it clear that decisions need to be defensible at a specific point in time, but over time, need not and should not be viewed as being 'set in stone'. Indeed, decisions can and should change, or at least be reviewed, in response to a number of factors including (but not limited to):

- observations about the effectiveness of the risk control measure implemented as an outcome of the taking of the decision;
- changes to the availability of risk elimination or control measures;
- changes to the cost of implementing risk elimination measures or applying risk control measures; and/or
- changes to the frequency of services (which would affect the foreseeable safety benefits side of the equation).

This step in the justified decision making process can be seen to parallel step 4 (check controls) in the risk management process. This step in the process recognises that the risk environment is ever changing and accordingly the risk management process needs to be dynamic: able to identify changes and respond, such that the duty holder continues to be in compliance with its statutory duty.

Figure 2 brings together, in a diagrammatic form, the complementary steps being undertaken in the risk management process and in the justified decision making process.

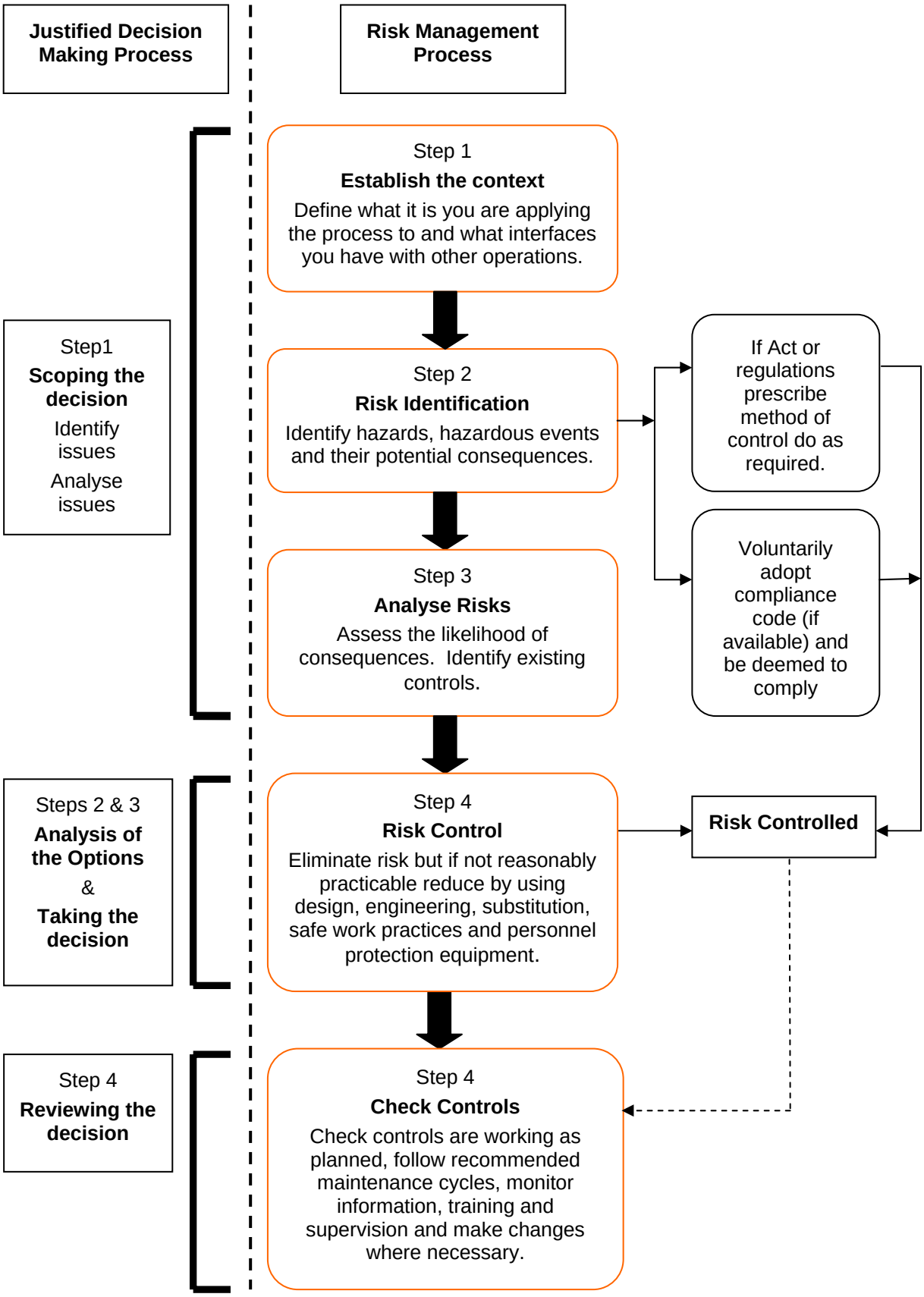
As indicated in the next section, the entirety of the considerations portrayed here are required to be undertaken in order for the duty holder to be in a position to demonstrate compliance with its statutory duty. Various judgements (as flagged in the text above) will need to be made whilst undertaking this process. The need for application of judgement cannot be avoided.

2.3.5 Additional criteria applicable to the 'taking of the decision'

In addition to the decision making criteria that duty holders are legally obliged to apply, other criteria can and should be applied by duty holders when taking the decision. There is no such thing as a pure safety decision: judgements will be made on the basis of commercial criteria as well as legally enforceable safety criteria. For example, if the cost of compliance associated with the application of legal criteria to a particular circumstance are so high that the undertaking of the activity is not commercially viable, then the commercial criteria will take precedence – the duty holder will cease undertaking the activity or part thereof, rather than making the expenditure required on risk controls that is necessary to satisfy the legal duty to ensure safety, SFAIRP.

Such commercial criteria are to be applied at the discretion (and in the interests) of the duty holder. Such criteria should not only consider the direct impacts in terms of costs and benefits but also the indirect impacts. For example, it is rational and indeed necessary that duty holders consider foreseeable political and public reactions to possible accident scenarios (e.g. those involving multiple fatalities). It is important that duty holders consider the implications arising from those reactions (loss of revenue, patronage, etc), and as a result, consider whether this justifies a higher level of risk control than would otherwise be provided. This is an appropriate method for taking into account 'societal concerns', recognising that perceptions of safety affect the reality of commercial performance to the extent to which they affect behaviour of customers, the public and other persons potentially affected by the undertaking of the railway operations.

Figure 2. Complementary steps of risk management and justified decision making processes



3. Legal Considerations

3.1 Purpose of statutory duty

The purpose of the duty 'to ensure safety' is twofold. Firstly, it makes it clear where accountability for achievement of safety lies, that is, with the duty holder. Secondly, it clarifies the outcome that is being sought, that is, safety.

The inclusion of statutory duties in the rail safety regulatory regime rectifies two identified shortcomings with the status quo arrangements: lack of clarity regarding where accountability for safety lies; and lack of clarity regarding the outcome being sought.

Under the pre-existing rail safety regulatory regime, the primary obligation was to gain and maintain accreditation, not necessarily ensure safety. The accountability for developing safety management systems resided with the rail transport operators, but the practice of sign-off on the 'adequacy' or 'suitability' or 'appropriateness' of proposed safety management systems by regulators clouded the issue of where accountability lied. The inclusion of statutory duties with the regulatory regime and complementary changes to the purpose of accreditation rectifies these shortcomings.

A third benefit of including statutory safety duties in the rail safety legislative regime is that it clarifies and confirm the complementary relationship between OHS and rail safety and supports the consistency of outcomes that each of these concurrent regulatory regimes is aimed at achieving. If there was uncertainty as to the outcome each regime is aimed at achieving it would be possible for regulatory requirements to conflict and for compliance with both to be an impossible. Clearly, it is necessity that the outcome being sought is the same[1].

3.2 Purpose of qualification on duty

The phrase 'so far as is reasonably practicable' (SFAIRP), is used as a qualification on what would otherwise be an absolute obligation or duty. In the case of rail safety legislation, the obligation is to ensure the safety of railway operations for which the party is responsible or partially responsible for (as may be the case with a contractor or supplier). Without the SFAIRP qualification the requirement to 'ensure' is tantamount to requiring the duty holder to provide a guarantee. For a host of reasons relating to foreseeability, cost and limits on the level of control that can be exercised, the imposition of an absolute duty or obligation is impracticable. Accordingly, the SFAIRP qualification is used.

[1] This statement assumes that there is regulatory overlap between rail safety and OHS, that is, both apply concurrently. Regulatory overlap exists under status quo arrangements. It would be possible for Governments to remove the regulatory overlap by, for example, excising regulation of rail safety from OHS jurisdiction. If this were the case, the relevant Government could choose, (subject to a rationale for doing so) to seek different outcomes, that is, set a different safety performance obligation.

The SFAIRP qualification is either included in the formulation of the obligation (the wording of the duty itself), or is indicated in the primary Act as an acceptable defence to a prosecution under the Act. The formulations of the existing OHS duties differ between jurisdictions, but are consistent in their substantive effect. Legal analysis undertaken by Bluff and Johnstone (2005, p198) in relation to the formulation of the OHS duties is that:

> *In all of the OHS statutes apart from the Workplace Health and Safety Act 1995 (WHSA(Qld)), these absolute or strict liability duties are qualified by whether it is 'reasonably practicable' ('practicable' in Western Australia and the Northern Territory) to take particular measures to ensure worker health and safety. The WHSA (QLD) establishes absolute duties and provides that it is a defence to a prosecution for a contravention of a general duty for the duty holder to prove (on the balance of probabilities) that he or she followed the relevant regulation or code of practice, or, where there is no regulation or code of practice about exposure to a risk, that he or she chose an appropriate way and took reasonable precautions and exercised proper diligence to prevent the contravention. The later expression is a recasting of the reasonably practicable expression.*

The model *Rail Safety Bill 2006* includes drafting notes that authorise States and Territories implementing the model law to change the formulation of the general duties included in the model Bill so that they are consistent (when implemented) with the duties included in OHS legislation that applies in the jurisdiction.

The formulation used in the Bill is 'to ensure safety of rail operations, so far as is reasonably practicable' (note: the qualification is included in the formulation of the duty itself). It is understood that some jurisdictions will change the duty to, 'to ensure the safety of railway operations' and include in their State or Territory Act a provision that specifies it is an acceptable defence to a prosecution for a contravention to prove (on the balance of probabilities) that he or she has done everything that is reasonably practicable to prevent the contravention of the duty.

The authorisation of 'local variations' by States and Territories recognises that priority needs to be attached to the rail safety duties being consistent with the OHS duties within the jurisdictions in which they to apply. As indicated by Bluff and Johnstone (2005) this does not introduce a material inconsistency between jurisdictions because they are consistent in their substantive effect.

In support of this position, Sherriff (2005) asserts that:

> *Fortunately there has been a consistency in the line of authorities in various State courts and in the High Court of Australia interpreting practicable and reasonably practicable and the meaning is accordingly well settled.*

3.2.1 Overview of Interpretation of duties by courts

A study of case law shows that Australian courts adjudicating on alleged breaches of OHS duties commonly take into account a number of factors when determining whether the actions taken to ensure the safety of operations were 'reasonably practicable'[2].

Courts do not demand the impossible to be done. To fulfil their legislative obligations, organisations are expected to take a proactive and common sense approach.

This is reinforced by the Australian High Court which observed in 2001 that the words 'reasonably practicable' are *ordinary words bearing their ordinary meaning. And the question whether a measure is or is not reasonably practicable is one which requires no more than the making of a value judgment in the light of all the facts. (Slivak v Lurgi (Australia) Pty Ltd 2001).*

The wording and intended meaning of this judgement is important in two regards:

- whether measures need to be taken, and the extent of those measures, needs to be decided on the circumstances and facts of each case; and
- there is no absolute precision about what constitutes a level of risk control that is reasonably practicable - value judgements inevitably need to be made.

In general, the courts have considered the statutory duties to be a statutory enactment of the common law duties of care which provide the basis for an action for damages for negligence. However, it should be noted that although there cannot be a liability to damages for negligence without there first being an injury, loss or damage, it is possible to be prosecuted for a breach of duty owed under legislation without injury, and even, without incident. Sherrif (2005) cites the case of *R v Feltourn Holdings Pty Ltd* (unreported, County Court, 11 June 1996) where the judge accepted that the defendant company was guilty of an offence for a breach of duty even though the relevant circumstances did not result in injury to any person.

3.2.2 Factors to be considered

Clause 7 of the model *Rail Safety Bill* makes it clear that the obligation of duty holders (see section 28 and 29 of the model *Rail Safety Bill*) is to eliminate risks to safety; or if it is not reasonably practicable, to reduce those risks so far as is reasonably practicable. The provision goes on further to say that in determining what is 'reasonably practicable', regard must be had to the following five factors:

- the likelihood of the risk concerned eventuating;
- the degree of harm that would result if the risk eventuated;
- what was known or ought reasonably to be known, about the risk and any ways of eliminating or reducing the risk;
- the availability and suitability of ways to eliminate or reduce the risk; and
- the cost of eliminating or reducing the risk.

[2] or in Queensland, whether all reasonable precautions and proper diligence had been exercised to prevent the contravention.

Each of the five matters must be considered when demonstrating SFAIRP, and are described in further detail below.

The degree of harm that would result if the risk eventuated and the likelihood of the risk concerned eventuating

For the risk to be considered at all, the duty holder will have had to identify the risk. Section 57(c) of the model *Rail Safety Bill* requires that the duty holder *identifies and assesses 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*.

Having identified the risk, the degree of potential harm and the likelihood of the risk being realised need to be considered jointly.

Harm refers to the potential severity of injuries and the number of persons that may be injured if the risk eventuated.

It is clear from the cases over many years in all Australian jurisdictions that the degree of harm that may eventuate is in practice the most important factor in determining what is reasonably practicable (Sherrif, 2005). A realistic or appreciable risk of death, the risk not being fanciful even if remote, is expected by the courts to compel efforts towards elimination of the risk or reduction to a point very close to it.

Likelihood refers to the need to consider the frequency with which circumstances give rise to any particular hazard, or with which a person or persons may be exposed to the hazard and associated risk.

The foreseeability of such circumstances and the probability that these circumstances will eventuate has been a factor in many court cases. For example, comments of the Court of Criminal Appeal in *The Queen v Australian Char Pty Ltd* (1995) indicate the importance of responding to foreseeability (and in turn likelihood):

> *…in many employment situations the risk of injury…is negligible so long as the employee executes his work without inadvertence and takes reasonable care for his own safety. But long experience has shown that employees do sometimes act inadvertently or without due care for their own safety. It is in that context that an employer must guard against such acts or omissions as may foreseeably cause injury…*

The degree of harm assessed should not be limited to the most likely outcome that could eventuate. Consideration should also be given to the worst credible outcome. For example, a low speed derailment may be expected to result in minor injuries, but the potential for multiple fatalities and injuries is also there.

It may be argued that if there is only a low likelihood of very minor injury, such as minor bruises or cuts, then the degree to which the risk reduction may be required may be far less, opening up the possibility of directing resources towards the reduction of the risks with potentially more severe outcomes. If however, there is a high likelihood of minor injury then some significant effort should be made to reduce the risks even though the consequences may be thought to be minor.

When considering these possibilities it becomes clear that decisions about risk elimination or control should be based on the highest risk (i.e. the product of likelihood and degree of harm).

As indicated in Part A of this guideline, the undertaking of steps 1 (identification) and 2 (assessment) of the risk management process, and the complementary process of 'scoping the decision' as part of the justified decision making process, is a precursor to fulfilling the duty holder's obligations in relation to these matters.

The duty holder must ensure it has a good understanding of the risks for which they are responsible. The duty holder needs to be in a position to show that they have identified and documented the risk in order to be in a position to demonstrate that they understand the risk. Three recommended steps are as follows:

- determine how the risk is currently controlled (if at all);
- identify not only the risk but the chain of events that lead to the risk eventuating, that is, what are the precursors; and
- assess the likelihood and consequences of the risk, and how that risk contributes to the overall risk profile.

This will require the following:

- appropriate competency of those involved in the assessment and may include access to expert involvement; and
- consultation with the various stakeholders who are in a position to help ensure a proper understanding of the hazards or risks and to ensure risk controls are reasonable, accepted, practical and effective.

What the person concerned knows, or ought reasonably to know, about the risk and any ways of eliminating or reducing the risk

The previous two factors required the duty holder to have a good understanding of the risk(s). Knowledge and understanding of the risk is an important precursor to treatment, as without this knowledge and understanding, the duty holder will lack the means to do anything about the risk. Having developed an understanding of the risk, consideration of ways of eliminating or controlling the risk can be made.

The important aspect of the duty, established via the case law, is that it is not only what the duty holder knows, it is also what the duty holder ought reasonably to know about the available means of eliminating or controlling the risk. In general, this has been interpreted by the courts to be the knowledge available to someone in the position of the duty holder, that is, relevant industry knowledge.

In effect, this establishes the minimum expectation for duty holders. If the duty holder knows of additional or alternative controls, or becomes aware of such, the duty obliges the duty holder to act on this knowledge by carefully considering the reasonableness of applying the risk elimination or risk control measure.

Understanding ways to eliminate or reduce risk can be gained by:

- reference to established standards, where applicable. This may include local and international standards, codes of practice, company procedures and track access agreements. The standards used must be applicable to the risk;
- reference to 'good practice'; and
- drawing on knowledge held by those performing the assessment and of stakeholders.

The following should be considered when establishing what is 'good practice':

- the practice is established in the jurisdiction, or another jurisdiction which has railway operations that are similar in scale to the operation in question;
- the practice is established and widely implemented in a similar industrial sector;
- the practice is enforced by legislation in more than one other country (a practice is prima facie a good practice if it is mandated in more than one country);
- the practice has demonstrably improved safety in its current application;
- the application of the risk elimination or control measure is relevant to the circumstances, as shown by experience of other organisations facing similar operating conditions;
- the established risk elimination or control measure of combination thereof has a proven track record in terms of incident history both locally and internationally; and
- the application of the risk measure is supported by existing reports or studies.

The availability and suitability of ways to eliminate or reduce the risk

Any potential alternative or additional risk controls should be considered for their suitability to the duty holder's specific environment and operations. This requires the duty holder to determine what options are available to them to reduce or eliminate the risk and if they are suitable. The emergence of new technology or systems may offer new ways to control the risks but the question of their availability and suitability remains.

In assessing the suitability of risk controls, the duty holder through analysis or professional judgement may consider whether they will be:

- technically and logistically suitable, for example, compatible with the existing systems or operating requirements, or available at the locations required;

- environmentally suitable, for example, suited to the climatic conditions or operating environment; and
- effective at reducing the risk.

The following points should be considered:

- the level of risk reduction offered;
- the hierarchy of controls prescribed in OHS legislation should be used when considering additional risk controls;
- the number of other independent risk controls providing protection;
- the potential for common failure modes which could render more than one risk control ineffective;
- the number of hazards a particular control deals with; and
- whether the implementation of the risk control is significantly detrimental to other service delivery goals (e.g. journey time). As with the other matters the sacrifice must be balanced against the risk (likelihood and degree of harm).

If alternative or additional controls are not considered practicable then their rejection should be justified. In adherence to the justified risk making process (adopted by the duty holder), records of the decision should be kept.

The cost of eliminating or reducing the risk

The consideration of costs relative to benefits requires a value judgement to be made. Case law indicates that duty holders should err in favour of making the expenditure on risk controls. The decision to not act should only be made where the likelihood of injury is remote or the cost is so disproportionate to the potential benefit that it would clearly be unreasonable to require the expenditure (Sherrif, 2005). This so called 'gross disproportion' test was established following the language of *Lord Asquith in Edwards v National Coal Board (1949)*. This case established that a computation must be made [before the occurrence of an accident] in which:

> *the quantum of risk is placed in one scale and the sacrifice, whether in money, time or trouble, involved in the measures necessary to avert the risk is placed in the other; and that, if it be shown that there is a gross disproportion between them, the risk being insignificant in relation to the sacrifice, the person upon whom the duty is laid discharges the burden of proving that compliance was not reasonably practicable.*

Bluff and Johnstone (2004:8) consider the *Edwards v The National Coal Board* judgement definitively defined 'reasonably practicable'. They go on to note (pp8-9) *that these English decisions have been confirmed by the Australian High Court*. In *Slivak v Lurgi (Australia) Pty Ltd (2001)*:

> *The words 'reasonably practicable' have, somewhat surprisingly, been the subject of much judicial consideration. It is surprising because the words 'reasonably practicable' are ordinary words bearing their ordinary meaning. And the question whether a measure is or is not reasonably*

> *practicable is one which requires no more than the making of a value judgment in the light of all the facts. Nevertheless, three general propositions are to be discerned from the decided cases: the phrase 'reasonably practicable' means something narrower than 'physically possible' or 'feasible'; what is 'reasonably practicable' is to be judged on the basis of what was known at the relevant time; to determine what is 'reasonably practicable' it is necessary to balance the likelihood of the risk occurring against the cost, time and trouble necessary to avert that risk.*

The important observation to be made is both the *Coal Board* and *Slivak v Lurgi* judgements require a comparative assessment and balancing of costs and benefits.

A word of warning is necessary. A practical interpretation of relevant case law leads to the conclusion that cost considerations will rarely justify doing nothing. It should be remembered that the conduct or omissions of the party will most likely be considered with the benefit of hindsight, in the light of an accident and probable injury, which will make arguments about foreseeability and seriousness of consequences difficult to put successfully in favour of the defendant.

Also a rail transport operator may be tempted to take into account its financial circumstances when deciding what is reasonably practicable. It should be noted however that case law establishes that 'financial strength or weakness' is not relevant in determining the proper degree of care. Reasonable practicability is an objective test and the specific financial circumstances of the duty holder do not provide an excuse for not proceeding with the implementation of a risk control. When considering what is reasonably practicable the duty holder is being asked to balance social costs (those borne by the duty holder and any indirectly borne by others) and social benefits (those savings available to the duty holder and the savings in terms of deaths, injuries and property damage that would foreseeably be borne by others). If the social benefits outweigh the social costs then the duty requires the action to be taken even if the corresponding expenditure requirement is not commercially feasible. In such circumstances the duty holder faces a choice between suspending certain types of operation or shutting down completely because the duty holder is not able to meet the performance obligation implied by the duty.

3.3 Applying and balancing the factors

All of the five factors must be considered in determining what is reasonably practicable. The factors are inter-related and cannot be considered in isolation. The question of cost, for example, cannot be considered without reference to the issues of likelihood, degree of harm and availability of various ways to minimise the risk.

The determination of what is reasonably practicable must consider all of the five factors at a particular point in time. What may have been impracticable or unreasonable will change over time. Cost of new technology may be prohibitive in the first instance but reasonable and affordable at a later point in time following a reduction in price. A risk control measure not of practical use when combined with a particular machine may be able to be adopted at a latter point in time such that it is available and suitable.

This highlights the fluid nature of what the duty implies and the on-going need for review and modification.

As is established in the Australian High Court decision *Slivak v Lurgi* determining whether a measure is reasonably practicable ultimately requires a comparative analysis: the duty holder to must weight up the likelihood of the hazard or risk causing harm, and the gravity of that harm, against the cost, time and trouble of removing or reducing the risk.

3.4 The 'bottom line'

Case law makes it clear that duty holders are not expected to do the impossible. For example, in *Holmes v R E Spence (1992)* Justice Harper makes the point that:

> *…The Act does not require employers to ensure that accidents never happen. It requires them to take such steps as are practicable to provide and maintain a safe working environment… The courts will best assist the attainment of this end by looking at the facts of each case as practicable people would look at them: not with the benefit of hindsight, not with the wisdom of Solomon, but nevertheless remembering that one of the chief responsibilities of all employers is the safety of those who work for them. Remembering also that, in the main, such a responsibility can only be discharged by taking an active, imaginative and flexible approach to potential dangers in the knowledge that human frailty is an ever-present reality…*

In seeking to comply with statutory duties, duty holders best defence against the occurrence of accidents, incidents and associated prosecutions is to adopt and diligently practice the risk management process and establish and apply a complementary method of justified decision making.

In most cases (given all the relevant circumstances) the determination of what is reasonably practicable (the 'taking of the decision') is expected to involve a direct judgement by appropriate persons based on a qualitative assessment of costs and benefits. In some other cases a more detailed quantified cost benefit analysis (CBA) may be required to better inform the decision.

In all cases, what is known to be good practice is the starting point. In all cases, judgements will be required. Duty holders must always be in a position to defend their judgements.

Appendix 1: References

Bluff L & Johnstone R, The Relationship between 'Reasonably Practicable' and Risk Management Regulation, Australian Journal of Labour Law, 2005.

Rail Safety Bill 2006.

Rail Safety Regulations 2006.

Rail Safety Regulators Panel (2005) National Rail Safety Accreditation Package, Version 2.0, RSRP, Australia.

Sherrif, B. (2005), OHS in practice: A guide to legislation is Victoria. ANSTAT legislation.

Standards Australia (2006) AS4292.1-2006 Rail Safety management, Part 1: General requirements, SA, Sydney.

Appendix 2: 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+victoria

Western Australia: Department for Planning & Infrastructure
http://www.dpi.wa.gov.au/

Acknowledgements

Principal Author
Paul Salter

Special thanks to:
Peter Burns
Simon Meiers
Andrew Kitto
Jan Powning

Rail Safety Package Steering Committee

Carolyn Walsh (Chair)	ITSRR, NSW
Natalie Pelham	ITSRR, NSW
Bruce Chan	Department for Planning and Infrastructure, WA
Derek Heneker	Department of Transport, Energy and Infrastructure, SA
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
Mark Addis	Department of Infrastructure, Energy and Resources, TAS
Jim Wolfe	Department of Transport and Regional Services
Roger Jowett	Rail Tram and Bus Union
Paul Milevsky	Queensland Rail, ARA
Phil Sochon	Australasian Railway Association, ARA
Clare Kitchener	RailCorp NSW, ARA
Andrew Kitto	Australian Rail Track Corporation, ARA

Rail Safety Regulators' Panel

Julie Bullas (Chair)	Queensland Transport, QLD
Janice McLoughlin (Sec)	Queensland Transport, QLD
Natalie Pelham	ITSRR, NSW
Michael Quinn	ITSRR, NSW
Rob Burrows	Department for Planning and Infrastructure, WA
Derek Heneker	Department of Transport, Energy and Infrastructure, SA
Alex Rae	Department of Infrastructure, Planning and Environment, NT
Alan Osborne	Public Transport Safety Victoria, VIC
Craig Hoey	Department of Infrastructure, Energy and Resources, TAS
Mervin Harvey	Land Transport Department, NZ

National Transport Commission
Paul Salter
Jan Powning
Kirsty McIntyre
Ray Hassall
Tim Eaton

Communicating for Health
Fiona Landgren
Jessie Murray