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ONRSR Guideline

Meaning of duty to ensure safety so far as is reasonably practicable

safe railways for Australia

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2.0	24 December 2014	Guidance on quantitative risk analysis and the relationship between SFAIRP and ALARP Additional references to RSNL, other ONRSR Guidelines and ISO 31000 Further guidance on continuous improvement and Reverse SFAIRP.
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1 Introduction

Rail transport operators, designers, manufacturers, suppliers, people loading and unloading freight have rail safety duties under the Rail Safety National Law (RSNL). The obligations of these duty holders are detailed at sections 52, 53 and 54 of the RSNL. Officers of duty holders and rail safety workers also have safety duties. These statutory duties do not require safety at any cost. Duties to ensure safety are qualified by 'so far as is reasonably practicable' (SFAIRP).

This document provides guidance on the interpretation and application of SFAIRP which is the standard that a duty holder is required to meet by the RSNL.

1.1 Disclaimer

This is a guideline only and is intended to be read in conjunction with the legislation and relevant Office of the National Rail Safety Regulator (ONRSR) policies. The contents of this guideline impose no legal duty, and where actions or requirements are described as mandatory these reflect requirements in the RSNL or Rail Safety National Law National Regulations 2012 (the National Regulations).

It is not intended to replace the provisions of the RSNL or other relevant legislation or to limit or expand its scope. In the event of an inconsistency between this guideline and the legislation, the legislation will prevail.

This document is a general guideline only and is not a substitute for professional legal advice. The contents of this document are correct at the time of writing. However, there may be subsequent decisions of courts or tribunals on the matters covered by this guide which mean that the contents are no longer accurate.

1.2 Acknowledgement

ONRSR acknowledges the work of Safe Work Australia. This guideline was originally adapted from the Safe Work Australia Interpretive Guideline – Model Work Health and Safety Act – "The Meaning of Reasonably Practicable"[1].

2 Management of risks 'so far as is reasonably practicable'

Under section 46 of the RSNL, duty holders are required:

> to eliminate risks to safety so far as is reasonably practicable; and

> if it is not reasonably practicable to eliminate risks to safety, to minimise those risks so far as is reasonably practicable.

The above duties are referred to in this guideline as the duties to 'ensure safety SFAIRP'.

The concept of SFAIRP is to achieve the best possible safety outcomes, to the extent that is reasonably practicable under the circumstances.

The RSNL (section 99) requires a rail transport operator to have a safety management system (SMS) that provides for systems and procedures for compliance with the risk management obligations under the RSNL. The National Regulations (regulation 16) requires the SMS to provide for all the matters listed in Schedule 1 of the National Regulations. This includes a requirement for risk management to be part of an SMS.

The international standard *ISO 31000*[2] establishes principles for effective risk management, and a framework for integrating the process for managing risk into an organisation. ONRSR considers

[1] Safe Work Australia Interpretive Guideline – Model Work Health and Safety Act – The Meaning of Reasonably Practicable

[2] International Standard ISO 31000 Risk management – Guidelines

that this standard describes good practice for duty holders in the management of risk. It should be noted that the RSNL has specific requirements for risk management and compliance with ISO 31000 alone may not be sufficient to meet these requirements. ONRSR provides further guidance on the requirement to have an SMS and how ISO 31000 can be used. Search for the *Safety Management System Guideline* on ONRSR's website: ONRSR.com.au

Further guidance is also available in the Australian Rail Industry Standards Organisation (ARISO) Guideline – *Safe Decisions*[3], which sets out a framework for industry stakeholders to use when making decisions that have the potential to affect safety.

3 How is reasonably practicable defined?

Reasonably practicable is defined at section 47 of the RSNL to mean that which is, or was at a particular time, reasonably able to be done to ensure safety, taking into account and weighing up all relevant matters including:

> the likelihood of the hazard or the risk concerned occurring; and

> the degree of harm that might result from the hazard or the risk; and

> what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk; and

> the availability and suitability of ways to eliminate or minimise the risk; and

> after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.

4 What is reasonably practicable is an objective test

What is reasonably practicable is determined objectively. This means that a duty holder must meet the standard of behaviour expected of a reasonable person in the duty holder's position and who is required to comply with the same duty.

There are two elements to what is reasonably practicable. A duty holder must first consider what can be done - that is, what is possible in the circumstances for ensuring safety. The duty holder must then consider whether it is reasonable, in the circumstances to do all that is possible. This means that what can be done should be done unless it is only reasonable in the circumstances for the duty holder to do something less. In general, where recognised industry controls are available but have not been implemented, this would be strong evidence that safety has not been managed SFAIRP.

The determination of what is reasonably practicable can never be a simple formula that the duty holder calculates by inputting values for known variables. The 'comfort' of the individual duty holder comes from adhering to the decision-making process and taking into account all relevant matters in an appropriate way. There are no guarantees that a court will agree with a duty holder's determination of what is or was reasonably practicable in each situation. However, it is far more probable the court will agree with the duty holder's determination of what is or was reasonably practicable if a process of justified decision-making is or was adhered to.

What is considered reasonably practicable will evolve over time as industry standards advance, new technology emerges, and control measures become more effective, accessible, or cost-efficient.

Determining what is reasonably practicable is not a one-off assessment, but an ongoing process throughout the lifecycle of an asset, system or activity. Duty holders must periodically review their risk controls to ensure they

[3] Rail Industry Safety and Standards Board (ARISO) Guideline – Safe Decisions

continue to reflect current knowledge, good practice, and available solutions. This requires active consideration of developments across the industry and a commitment to continuous improvement, rather than relying solely on decisions made at a single point in time.

5 How to determine what is reasonably practicable – the process

To identify what is or was reasonably practicable all relevant matters must be taken into account. These matters must be weighed up and balanced to achieve the highest possible level of protection that is reasonable in the circumstances. Some matters may be relevant to what can be done, while others may be relevant to what is reasonable to do.

These matters must be considered both in circumstances that have a long-term impact (e.g. the introduction of new rolling stock) and those that have a short-term impact (e.g. degraded mode operation of rolling stock).

Section 47 of the RSNL sets out five specific considerations for ensuring safety SFAIRP. All these factors must be considered when determining what is reasonably practicable. However, these five considerations are not the only things a duty holder must consider. For example:

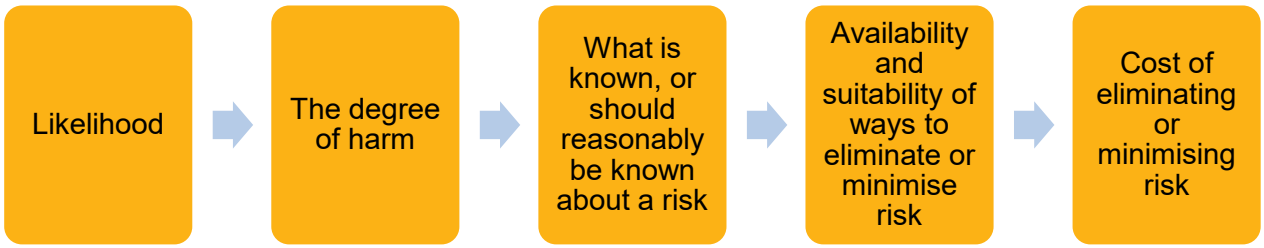
> there may be legislation other than the RSNL that requires or prohibits certain activities and limits what a duty holder can do; and

> the level of control or influence a duty holder has over a particular asset, activity or the actions of another person, such as managing risks where the management is to a certain extent contracted out to a supplier. The RSNL (section 51) makes it clear that a duty holder cannot transfer their duty to another person and section 262 prohibits a contract from excluding, limiting or modifying a duty. Where a duty holder enters a contact, they must have arrangements in place to ensure such suppliers comply with the requirements of the RSNL.

In addition, the RSNL and the National Regulations specify other risk management requirements, including documentation, with which accredited rail transport operators and registered rail infrastructure managers must comply.

The duty holder should consider all the facts and identify and consider everything that may be relevant to the risks and means of eliminating or minimising those risks.

The matters that duty holders must always take into account and weigh up are discussed in the following sections.



5.1 Likelihood and degree of harm

Risk is a product of the likelihood of a hazard or risk occurring and the degree of harm that may result (severity). Both factors must be carefully considered to ensure safety SFAIRP.

The greater the likelihood of a risk eventuating, the greater the significance this will play when weighing up all matters and determining what is reasonably practicable. If harm is more likely to occur, then it may be reasonable to expect more to be done to eliminate or minimise the risk.

The greater the degree of harm that could result from the hazard or risk, the more significant this factor will be when weighing up all matters to be taken into account and identifying what is reasonably practicable in the circumstances. ONRSR expects a duty holder to do more to eliminate or minimise risks with the potential for fatalities than risks of lesser harm.

When considering the degree of harm, all credible consequences of the hazard or risk should be taken into account. Typically, the greater the degree of harm that may result from the hazard or risk the more time and effort should be expended in ensuring safety.

The assessment of the likelihood of the hazard or risk occurring should take into account the possibility of human error and reasonably foreseeable forms of misuse on the part of workers or other persons.

Depending on the nature of the risk, determining the likelihood and severity may be done either qualitatively or quantitatively. Irrespective of the method used the degree of uncertainty in the assessment should be accounted for, particularly when assessing low likelihood, high severity hazards or risks (such as train collisions), where there is typically a lack of recent incident data to inform the assessment and the range of consequences can vary greatly.

Any risk criteria[4] set by a duty holder for the purposes of evaluating its risks must be appropriate to the nature of the risk to be evaluated. For quantitative risk assessments ONRSR encourages duty holders to establish quantitative risk criteria[5] (search for the Major Projects Guideline at ONRSR.com.au). In setting any risk criteria for the evaluation of risk, the duty holder should ensure that the risk criteria are not in conflict with the requirement to ensure safety SFAIRP.

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

The knowledge about a hazard or risk, and any ways of eliminating or minimising the hazard or risk, will be what the duty holder knows, and what a reasonable person in the duty holder's position (e.g. a person in the same industry) would reasonably be expected to know. This is commonly referred to as the state of knowledge.

A duty holder can gain this knowledge in various ways, for example by:

> consulting their workers;

> consulting others in the industry and determining what is industry good practice;

> undertaking risk assessments;

> analysing previous rail safety incidents;

> engaging subject matter experts;

> considering relevant Regulations, Codes of Practice and other sources of information, such as:

- material published by ONRSR;
- reputable technical standards, such as those published by ARISO and Standards Australia;
- industry publications; and
- published scientific, academic and technical literature.

[4] ISO 31000: Risk management – Guidelines defines risk criteria as the terms of reference against which the significance of a risk is evaluated, relative to organisational objectives, values and resources. The results of risk analysis are compared against risk criteria in order to assist in determining what action, if any, is required to treat the risk.

[5] Quantitative safety risk criteria are typically described in terms of individual risk (the probability an individual exposed to the risk will be killed in a year) or fatalities/Fatalities and Weighted Injuries per year.

5.2.1 Knowledge about the hazard or risk

It is reasonably practicable for a duty holder to:

> proactively take steps to identify hazards within their business or undertaking before they cause an incident, injury or illness. This should be done before the activity is undertaken or the circumstances occur that result in the risk.

> understand the nature and degree of any harm that an identified hazard may cause, how the harm could occur, and the likelihood of the harm occurring.

It is also reasonably practicable for a duty holder to consider and understand, within the available state of knowledge, how the following may cause or increase hazards and risks:

> potential failure of assets including plant and equipment, systems of work or safety measures;

> asset condition and degradation measures, particularly for ageing assets;

> continued operation of assets not designed or constructed to modern standards and the extent of any gaps relative to contemporary expectations;

> human error or misuse, spontaneity, panic, fatigue or stress; and

> interaction between multiple hazards that may, together, cause different risks.

5.2.2 Knowledge about ways of eliminating or minimising the risk

Approved Codes of Practice or industry standards may provide practical guidance on methods of eliminating or minimising risks, SFAIRP. A court may have regard to an approved Code of Practice or industry standard as evidence of what is known about a hazard or risk, risk assessment or risk control, and may elect to rely on the code or standard in determining what is reasonably practicable in the circumstances to which the code relates.

Ways of eliminating or minimising risks can also be identified by reviewing good practice measures that other duty holders may have in place to address similar risks in similar operational environments.

Good practice and standards may in some cases be sufficient to ensure safety SFAIRP. Duty holders should consider the relevance of a particular good practice or standard to the risk to be managed, determine whether it is still current and whether additional controls are also required. In particular, care should be taken when a standard is specified as a minimum requirement or where the standard has options in how it is applied. In such cases, duty holders should determine whether the minimum is sufficient, and what options are required to ensure safety SFAIRP.

In the case of technical standards, they can often apply to particular systems, structures or sub-systems. Duty holders should consider system interfaces and what effect these may have on the suitability of standards to ensure safety SFAIRP.

Approved Codes of Practice include a minimum standard for ensuring safety SFAIRP. A duty holder does not need to comply with the code if it is not reasonably practicable for its particular circumstances, or it is able to demonstrate to ONRSR that an alternative solution delivers a level of safety that is the same, equivalent or better than that achieved by the approved Code of Practice (section 250).

There may be many different ways of eliminating or minimising risks. The duty holder should identify as many of these as it reasonably can, to give them the greatest scope to choose and apply the most appropriate means to eliminate or minimise a risk in the particular circumstances.

5.2.3 The importance of consultation

Safety can be more easily achieved when everyone involved in railway operations communicates with each other to identify hazards and risks and reports incidents. By drawing on the experience of their workers and other people and organisations in the rail industry, duty holders can make more informed decisions about ensuring safety SFAIRP.

Good consultation encourages trust and a positive safety culture and results in:

- more informed decisions that harness the knowledge and experience of workers, and
- better shared understanding of safety risks and duties.

5.3 Availability and suitability of ways to eliminate or minimise risks

Duty holders must consider not only what is available, but also what is suitable to ensure safety SFAIRP. A risk control that may be effective in some circumstances or environments may not be effective or suitable in others, because of factors such as the physical characteristics of the system, skills of relevant workers, or the particular way in which the work is done.

ONRSR considers that the following are available to eliminate or minimise a hazard or risk:

- Equipment that is provided on the open market, or is reasonably possible to manufacture
- A work process (or change to a work process) that is feasible to implement.

ONRSR considers that a way of eliminating or minimising a hazard or risk is suitable if it:

- is effective in eliminating or minimising the likelihood and/or degree of harm of a hazard or risk;
- does not introduce new and higher risks in the circumstances; and
- is practical to implement in the circumstances in which the hazard or risk exists.

In assessing the suitability of risk controls, the duty holder may also 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;
- effective at reducing the risk.

The following points should also be considered:

- as well as meeting the SFAIRP test, any decision to reject risk controls and/or tolerate high or extreme risks must be made in compliance with an individual rail transport operator's SMS;
- the level of risk reduction offered by a control under consideration;
- other independent risk controls providing protection;
- the potential for common failure modes which could render more than one risk control ineffective; and
- the hazards a particular control eliminates or minimises.

It is also important to consider the lead time and level of risk exposure between the decision to adopt a reasonably practicable control measure and the introduction of that control measure into service. Where it is not practicable to immediately implement a control, for example a complex, engineered safety control may have a development lifecycle spanning several months to years, duty holders must determine whether it is reasonably practicable to introduce interim safety control measures. This may, for example, involve the application of temporary control measures or operational restrictions to minimise exposure to the associated risk.

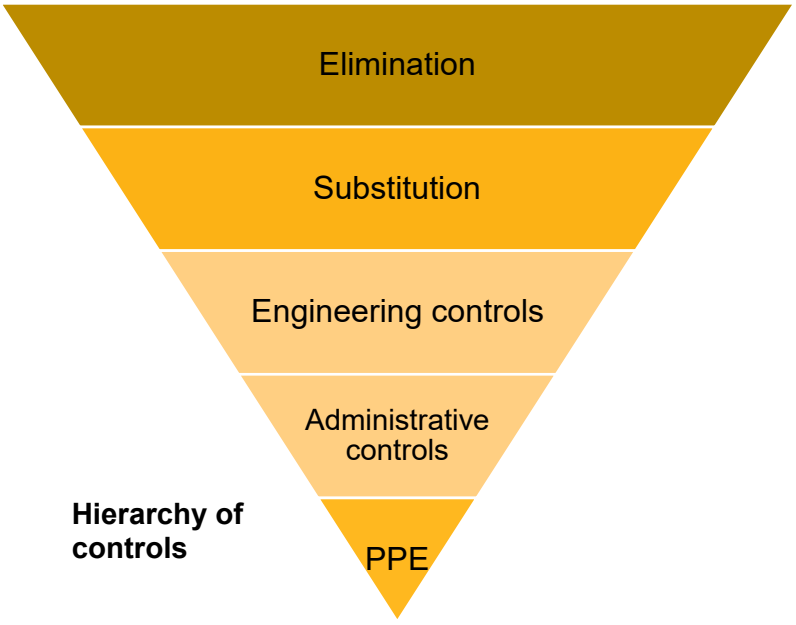
It is important to consider the lead time and level of risk exposure between the decision to adopt a reasonably practicable control measure and the introduction of that control measure into service.

Reliance on interim safety control measures to manage risk SFAIRP requires an appropriate understanding of the cost, lead time, and level of risk reduction associated with the steady state control measures. In such circumstances, ONRSR expects duty holders to have secured funding and resources to introduce the steady state control measures within defined timeframes. If that is not possible, delaying the activity that gives rise to the risk may be necessary.

Some workplace health and safety legislation requires application of the hierarchy of controls. This provides a priority order in which potential control measures should be considered when determining which are reasonably practicable. The hierarchy promotes the selection of controls that have a greater effect on reducing the risk and which are more reliable. For example, an engineering control is promoted ahead of administrative controls or the use of personal protective equipment. While the hierarchy of controls is not a feature of the RSNL, ONRSR still expects duty holders to prioritise more effective and reliable controls ahead of less effective ones. Rail transport operators and other organisations in the rail industry may also have safety duties under state and territory work health and safety legislation.

In determining risk treatments to ensure safety SFAIRP, options that eliminate risk should be given due consideration and priority. Where elimination is not reasonably practicable, the extent to which a control may reduce a risk, on its own or together with other controls, should be considered when weighing up what can reasonably be done.

Some controls may lower the likelihood of harm, others may lower the degree of harm that may result, and some may lower both. While the hierarchy of controls is a useful reference, it may be necessary for a duty holder to implement more than one control to eliminate or minimise a risk SFAIRP.



A rail transport operator must implement its SMS, including implementation of available and suitable risk controls. ONRSR expects identification and documentation of who is responsible for implementing the risk control measures (National Regulations, Schedule 1), and where external parties are involved, the respective roles and responsibilities of these parties.

Subsection 100(2) of the RSNL requires rail transport operators to keep a detailed record of all aspects of the risk assessment process. Importantly, this also includes documenting the reasons for both selecting and rejecting each of the control measures considered. If it is decided that to do nothing is reasonably practicable, then this decision must be documented.

Non-safety related considerations

Commercial considerations may also be a factor in a duty holder's decision-making. For example, it is rational and 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 incidents (loss of assets, 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. Perceptions of safety may affect commercial performance in terms of the behaviour of customers, the public and other persons potentially affected by the undertaking of the railway operations.

5.4 Cost of eliminating or minimising the risk

Although the cost of eliminating or minimising risk is relevant in determining what is reasonably practicable, it can only ever provide an input to a decision after assessing the extent of the risk (the likelihood and degree of harm) and the available ways of eliminating or minimising the risk. Ultimately, the duty holder must undertake a suitable and sufficient risk assessment **before** deciding which control measure(s) to pursue and do everything that is reasonably practicable to manage the risk. In all cases, safety should be clearly favoured ahead of cost.

The costs of implementing a particular control measure may include costs of purchase, installation, maintenance and operation of the control measure and any impact on productivity because of the introduction of the control measure.

A calculation of the costs of implementing a control measure should also account for the savings associated with any benefits the control measure introduces, e.g. fewer incidents and injuries, fewer equipment failures, potentially improved productivity and other business savings.

In identifying whether a particular expenditure is reasonable in the circumstances, the duty holder must consider:

> the likelihood and degree of harm of the hazard or risk; and

> the anticipated reduction of the likelihood and/or degree of harm that the control measure would introduce, if it was adopted. This is also referred to as the risk reduction.

In considering the risk reduction, at least two estimates of risk should be made; one before the implementation of a control measure and one after. The risk reduction is the difference in risk between the two estimates, summed over the life of the risk control. The risk reduction may also be referred to as the 'safety benefit'.

Often, a simple comparison of the risk reduction and the costs of the improvement can help support a decision as to which control measure(s) should be implemented. On other occasions, particularly in novel or complex situations, there may be a need to weigh the expected costs of one or more options against the expected benefits to support a decision as to which control measure(s) should be implemented.

This comparison, referred to as cost benefit analysis, is typically done by translating the safety benefit into monetary terms and weighing it against the cost. The cost / benefit ratio of a potential control measure is only one factor in determining whether it is reasonable to adopt and should not be the only evidence supporting a SFAIRP justification for rejecting a control. Quantified cost benefit analysis can, however, provide a structured basis for comparing the costs and benefits of different options and support a well-reasoned argument, informed by evidence and analysis, to bring rigour, objectivity and transparency to the decision process.

The safety benefit component of a predicted reduction in injuries and fatalities is translated into financial terms by applying a Value of Statistical Life (VoSL). There is no standard VoSL used in the Australian rail industry although various values have historically been published by government departments. The Office of Impact Analysis[6] provides a credible estimate of the VoSL of $5.87m (2026 figures). This estimate is based on international and Australian research and is derived from empirical evidence that has been assessed to ensure it is comprehensive and rigorous. If a duty

[6] Australian Government, Department of the Prime Minister and Cabinet, Office of Impact Analysis, Guidance Note: Value of statistical life, January 2026

holder intends to undertake analysis using a VoSL, it should document the selected VoSL in its SMS. The VoSL may also be referred to as the value of a prevented fatality (VPF).

A challenge in cost benefit analysis is that the estimation of risk, risk reduction and costs are subject to uncertainties. In determining what control measures are reasonably practicable, particularly where quantitative methods are used, consideration of the sensitivity of factors to test the robustness of the decision making should be undertaken. ONRSR recommends the use of a precautionary approach in the face of uncertainty, i.e. assume that control measures should be adopted unless there is a compelling case not to adopt them.

The cost of risk control options, individually and together, may be relevant when deciding which of the available options are reasonably practicable. If there are a range of options available to mitigate a risk, a duty holder should select the option(s) that achieve the best possible safety outcomes, to the extent that is reasonably practicable. Costlier option(s) that may further minimise the risk should only be rejected where the cost is grossly disproportionate[7] to the additional risk reduction it affords. Choosing a low-cost option that provides less protection simply because it is cheaper is unlikely to ensure safety SFAIRP.

Capacity to pay is not relevant

The question of what is reasonably practicable is to be determined objectively, and not by reference to the duty holder's capacity to pay or other particular circumstances. A duty holder cannot expose people to a lower level of protection simply because it is in a lesser financial position than another duty holder. If a particular duty holder cannot afford to implement a reasonably practicable risk control, the duty holder should not engage in the activity that gives rise to that hazard or risk.

6 Monitoring and review

An objective of the RSNL is to provide for continuous improvement of the safe carrying out of railway operations. Related to this is a requirement for rail transport operators to have procedures for monitoring, reviewing and revising the adequacy of risk controls (section 99).

The decisions on what is required to ensure safety SFAIRP should be reviewed when new risk controls become available or costs change, to determine whether additional measures are reasonably practicable. Similarly, the likelihood or degree of harm of a hazard or risk may change over time which would require previous decisions to be reviewed. For example, the increasing popularity and use of e-mobility devices containing lithium-ion batteries impacts the risk of fire on passenger trains, or, if a new failure mode for an asset is discovered, controls may need to be enhanced to ensure safety SFAIRP.

A duty holder is obliged to implement modern practices where it is reasonably practicable to do so. Existing practices and assets should be compared against relevant modern standards, including those that were not in force when they were first introduced and commissioned. This should be done across the lifecycle of the practice or asset.

As operational practices and railway assets age, newer versions can be developed which more effectively manage the associated risk. For example, newer passenger rolling stock will typically have traction interlocking on its doors which will prevent the traction system from operating when one or more doors are

[7] At Law, there is no precise 'gross disproportion factor'. In making a judgement on gross disproportionality, particular attention is paid to the degree of uncertainty in the assessment of costs and safety benefits, and the range of potential safety consequences. For the purposes of this guideline, the evidence at the Sizewell B Public Inquiry in the UK provides a starting point. Although this evidence was produced some time ago, ONRSR is not aware of subsequent legal proceedings or public inquiries in Australia or the UK that have countered these views or provided alternatives. In this evidence it has been suggested a gross disproportion factor of up to 3 for workers was applied. For risks to the public, it was suggested that the factor would depend on the level of risk, and where the risks were low a factor of about 2 was suggested, whereas for higher risks the factor should be about 10. There is no guarantee that a court would adopt the above suggested gross disproportion factors.

open. By comparison, older rolling stock may not originally have this control but retrofitting the control may be reasonably practicable.

A duty holder is obliged to implement modern practices where it is reasonably practicable to do so. Existing practices and assets should be compared against relevant modern standards, including those that were not in force when they were first introduced and commissioned. This should be done across the lifecycle of the practice or asset.

For railway assets in particular, the future planned lifetime of the asset may be a factor in determining whether its operation is still reasonably practicable. When assets age, there may be no obvious transition from 'safe' to 'not safe'. In such cases specific monitoring and review of asset condition may be a reasonably practicable control. Further guidance on this subject can be found in ONRSR's *Asset Management Guideline* (available at ONRSR.com.au).

Putting limits on the operating life of an asset may be considered in determining control measures required to ensure safety SFAIRP, but this cannot be used to justify an asset operating at a level incompatible with the risk criteria stated in the duty holder's SMS. A case not to make an improvement based largely on limited future lifetime would only be acceptable where the maximum extent of the future operational life is irrevocably fixed. In cases where the planned lifetime is not irrevocably fixed, an appropriate period of typical life extension should be selected having regard to all relevant matters (which may include industry norms) for the purposes of determining what is reasonably practicable.

7 ALARP vs. SFAIRP

Sometimes the term As Low as Reasonably Practicable (ALARP) is used by the rail industry. Both ALARP and SFAIRP have at their core the concept of reasonably practicable. The ALARP framework was originally developed to assist those with legal obligations for safety to comply with these obligations. ONRSR considers that those duties to ensure safety SFAIRP and the ALARP framework generally both call for the same tests to be applied. In legal proceedings, the particular term cited in the relevant legislation will be used. Whilst some legislation in Australia cites the term ALARP[8], in the case of the RSNL the term cited is SFAIRP.

Duty holders should be cautious of using ALARP guidance documents produced by other jurisdictions or for legal frameworks other than the RSNL. Any such guidance should be used only if it supports compliance with the RSNL.

A common feature of ALARP guidance is the so-called 'ALARP triangle'[9]. The triangle, referred to as the tolerability of risk framework, divides levels of risk into three regions – the unacceptable region, the ALARP or tolerability region and the broadly acceptable region. Each region then has a corresponding set of requirements for a duty holder. Defining such regions is a way of establishing risk criteria and may be helpful for organisational priority setting based on risk.

Duty holders are encouraged to establish risk criteria[10] for the evaluation of safety risk; in particular, ONRSR considers it good practice to establish an upper limit of risk beyond which a duty holder will not accept the risk unless it is reduced (for major projects ONRSR specifies this as one of several minimum expectations – see the *Major Projects Guideline*).

However, it is important to note that risk criteria must not be set such that they diminish obligations set by the RSNL. Specifically, should a duty holder define a broadly acceptable region in its criteria, ONRSR will still expect the duty holder to eliminate or minimise risks assessed as being in this

[8] For example, the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2024.

[9] For example, the UK Health and Safety Executive document, Reducing Risks Protecting People 2001, which sets out a framework for the tolerability of risk.

[10] Risk criteria should be developed to match the nature of the risk being evaluated. I.S. EN 31010:2010 (Risk management – Risk assessment techniques) provides guidance on developing risk criteria.

region SFAIRP – in other words a risk cannot be excluded from the requirements of the RSNL merely because it is assessed as being small.

8 Reverse SFAIRP

Duty holders may on occasion wish to remove a risk control that they believe to be no longer reasonably practicable. ONRSR acknowledges there may be very specific, but limited, occasions when it may be shown that an existing control is no longer necessary to ensure safety SFAIRP. These include:

- where the cost of maintaining the control has substantially increased (however in this instance, it may be reasonably practicable to introduce a new control rather than accept an increase in residual risk);
- the risk reduction provided by the control has reduced due to the risk reduction achieved by other or new controls;
- where a risk control interacts adversely with another risk control; or
- it can be shown that the introduction of the control was not necessary to ensure safety SFAIRP in the first place.

Any argument to remove risk controls should be subject to comprehensive risk assessment undertaken before the removal has taken place.

Examples of circumstances where ONRSR would not consider it appropriate to remove a control include:

- where the residual risk is no longer eliminated or minimised SFAIRP;
- transferring resources from areas, activities or exposed groups with lower risk to those experiencing higher risk. The RSNL requires every risk to be eliminated or minimised SFAIRP, and it is not acceptable to do less than this simply because the risk is even higher elsewhere;
- where one duty holder (e.g. the rolling stock operator) relaxes risk controls at the expense of another (e.g. the rail infrastructure manager) without documented risk transfer through an appropriate instrument (e.g. a Safety Interface Agreement);
- where changes result in a level of risk to the public, passengers or workforce which the duty holder's SMS rates as intolerable;
- where a control is removed to reduce operational costs or increase operating profit without consideration of whether the control was required to manage the associated risks SFAIRP; or
- where a control is removed to reduce operational costs or increase operating profit without introducing other reasonably practicable controls to manage the risk.

These are just some examples. There may be other situations where it is inappropriate to remove a control.

Appendix A – The operation of reasonably practicable – An example

ABC Rail Pty Ltd operates a high-speed, overnight freight transport service. Each night the freight must be loaded and unloaded at different terminals. The type of freight varies, and the weight and configuration must be re-checked with each load. This is time-consuming and the loading equipment is somewhat unreliable and requires skilled workers to manually calculate the weight in some instances.

ABC Rail's Chief Operating Officer has decided to initiate a review of terminal operations with the goal of improving safety and productivity. A critical part of this review is a risk assessment of the existing freight loading and unloading practices.

ABC Rail's risk management process is defined within its safety management system. It is consistent with the guidance set out in ISO 31000 and ONRSR's Safety Management System Guideline and involves several steps, which are applied as follows:

Scope, context and criteria

> The scope of the risk assessment is defined, and context is provided to ensure those involved in the assessment are adequately informed.

> The scope covers safety risks associated with the loading and unloading activities, including the equipment and procedures used to calculate and check the weight and configuration of the load.

> Confirmation is provided that the risk criteria outlined in ABC Rail's risk management procedure will be used during the risk assessment, including application of its risk assessment matrix.

Risk Identification, Analysis and Evaluation

> The workplace hazards and risks associated with the activities are identified, which include personal injuries from loading and unloading unknown volumes of freight.

> Risks to the safety of railway operations associated with the loading and unloading activities are identified, including the risk of a derailment caused by an imbalanced load. Potential consequences of this risk include train crew injuries and fatalities.

> Previous incident history and the reliability of current controls are considered to estimate the likelihood and severity of train crew fatality, as a result of the derailment risk. Using the risk assessment criteria contained in the safety management system, this risk is considered 'High'.

> Consideration is initially given to stopping the activity to fully eliminate the risk. This was not considered a realistic option as the loading, unloading and transportation of freight is integral to ABC Rail's core business of freight delivery.

> A review is undertaken to identify other ways to minimise the risk. The review involves:

- determining the legal requirements under the RSNL and the National Regulations (e.g. for training and instruction, and engineering control requirements);
- obtaining information from relevant standards, Codes of Practice, industry publications and machinery suppliers about the various ways of minimising the likelihood or consequence of an incident;
- exploring what control measures similar freight terminal operators have in place to control the risk; and
- consulting with subject matter experts.

> Two potential treatment options are identified:
  - automating the loading process with newer computer-based technology that does not require manually calculated load weights and limits. This also allows loaders and unloaders to stay a safer distance away from the loading / unloading operation and includes a cut-off to stop the operation if a worker comes too close to moving parts; and
  - retrofitting scales to identify the weight of a load and the combined weight with the rolling stock.

> The two treatment options are evaluated to determine whether they are available and suitable for use in the circumstances, and the degree to which they will either individually or collectively minimise the risk SFAIRP. This involves:
  - considering the level of risk reduction (safety benefit) provided over the life of the two options; including whether they introduce other hazards or increase other risks.
  - considering the costs of implementing the two options, offset by any savings that they introduce. This includes the cost of purchase, installation, maintenance and operation of the options, together with any efficiency or other business savings they introduce.

> Having taken into account and weighed up all relevant matters, ABC Rail decides to purchase the new computer-based technology. Although it is more expensive than retrofitting the existing system, it provides significant safety benefits and also increases efficiency. Given the cost of the option compared with the risk reduction anticipated from the new system, the costs are considered unlikely to be grossly disproportionate to the risk.

Risk Treatment

> ABC Rail establishes the Automated Loading Project, a dedicated project for the procurement and implementation of the computer-based loading and unloading technology. The safety change management procedures contained within the safety management system are applied throughout the lifecycle of the project to help ensure safe outcomes.

> When scoping the project, ABC Rail recognises that it will be approximately six to nine months before the technology enters into service. A decision is made to introduce a temporary, administrative control in the interim, which includes a requirement for manually calculated weights to be checked by a supervisor.

> Upon receipt of the new equipment, ABC Rail installs it according to the manufacturer's instructions and provides its workers with relevant training on the safe operation and maintenance.

Monitoring and Review

> The effectiveness of the temporary, administrative risk control is reviewed in consultation with workers one month after implementation. This included an audit to confirm that the requirement for supervisors to check manually calculated weights is being adhered to.

> The effectiveness of the new technology is also reviewed one month after its implementation in consultation with workers. This includes a review of incident data to determine whether there has been a corresponding improvement in reportable load irregularities.

> Periodic review of the effectiveness of the risk controls is undertaken in accordance with ABC Rail's risk management procedure.

Communication and consultation

> Throughout each step in the risk management process, ABC Rail communicates and consults with relevant workers and stakeholders. This includes risk owners, control owners, subject matter experts, health and safety representatives, union representatives and those that are exposed to the risk. This provides the duty holder with assurance that all reasonably foreseeable risks and the ways to eliminate or minimise them have been considered.

Recording and Reporting

> ABC Rail keeps a detailed record of all aspects of the risk assessment process in the form of a risk assessment report, meeting minutes, risk register entries and safety change management documentation.

> Regular reports are provided to management on the progress of the Automated Loading Project, as well as the ongoing effectiveness of critical risk controls, through established safety performance indicators.