THE IMPLICATIONS OF COMMON LAW DUE DILIGENCE

Gaye E Francis BE MIEAust
Richard M Robinson BE BA FIEAust
R2A Due Diligence Engineers

SUMMARY

The Australian Federal Labor government’s draft Work Health and Safety Act (revised 11 May 2010) is planned to be proclaimed in all Australian jurisdictions on 1 January 2012. It applies equally to occupational health and to public safety. Possibly its most surprising and novel attribute is that it requires the exercise of due diligence by responsible officers.

This will formally complete the Australian intellectual transition from a focus on hazard based risk assessment (especially involving target levels of risk or safety) to precaution based (due diligence) risk assessment. This is a fundamental risk paradigm shift. The demise of the popular technical risk target approach as referred to by many standards and used by many rail organisations will be explained, together with the world of due diligence as it applies to railways.

A case study for a railway cutting rockfall due diligence review as completed for Railcorp is described together with the implications for land use planning around major hazard facilities.

1. INTRODUCTION

There has been two paradigms of risk assessment uneasily coexisting over the last two decades or so. One relies on the notion of formal risk assessment techniques supported by objective target levels of risk and safety, the other on the common (or case) law principle that all reasonable practicable precautions need to be demonstrated to be in place.

Most risk assessors have got around this problem to date by suggesting that the two approaches practically amount to the same thing. For example, equating ALARP (as low as reasonably practicable) with the common law balance of the significance of the risk vs the effort required to reduce it.

This paper will describe why the two approaches are not equivalent. It will also describe how the Australian Federal Labor government’s proposed national OHS legislation will subordinate formal risk assessment processes involving target levels or risk or safety to the common law, due diligence approach.

2. RISK

Risk means different things to different people at different times. However, one element that is common to all concepts of risk is the notion of uncertainty. If we knew what would happen next, there would be no risk. That is, for the omniscient or omnipotent the concept of risk would be incomprehensible. But in the world of finite beings, all face uncertain, possibly precarious futures. Risk, and what to do about it, are vital human concerns. Decision-making processes, whether of statutory regulators, court judges, business managers or ordinary individuals, reflect human concern to improve safety, security, and the reliability, efficacy and profitability of their endeavours in the face of ever-present uncertainty. Interestingly, the recently released risk management standard, AS/NZS ISO 31000, similarly defines risk in this way.

The hazard based approach to risk (described in the next section) represents just one such paradigm which is currently used extensively in railways, major hazards and for land use planning, and is described in referenced standards including AS (IEC) 61508 for SIL (safety integrity levels).

2.1 Hazard Based Risk Assessment

A hazard based approach to risk is the one popularly described in the risk management standard AS/NZS ISO 31000, that is:

* Establish the context
* Risk assessment:
  - Risk identification
  - Risk analysis
  - Risk evaluation
* Risk treatment

In the Figure 1 below, this means starting at the top identifying credible hazards and then, using the metric of risk, moving to hazard assessment and then on to the control options to establish risk...
treatments very often using target levels of risk or safety as a decision making benchmark.

![Diagram: Good practice approach](image)

**Figure 1. Good practice approach**

### 2.2 Precaution Based Risk Management

An alternative to hazard based risk management is precaution based risk management. In the figure above, this starts at the top but then jumps straight to the right to see what options are available to deal with the identified issues, especially recognised (known) good practice options. That is:

- Establish the context
- Precautionary assessment:
  - Credible, critical issues identification
  - Control options identification
  - Judgment (risk evaluation)
- Risk treatment (action)

(with the advantage of 20:20 hindsight) what precaution/s that should have been implemented weren’t. Risk is not strictly relevant since, after the event, likelihood is not relevant. It has happened. As an Australian judge has been reported as noting to the engineers after a serious train incident: "What do you mean you did not think it could happen, there are 7 dead?" That is, the notion of risk is really only used to test the value of the precaution it is claimed ought to have been in place. How risky a situation is before the event is not germane except in so far as an aid to determining the reasonableness of possible precautions.

This means risk control is primarily focussed at rare, high consequence events. Arguments capable of legal scrutiny need to be developed. This is where R2A has always understood that Lord Cullen’s definition of the safety case regime (2001) is focussed.

A safety case regime provides a comprehensive framework within which the duty holder’s arrangements and procedures for the management of safety can be demonstrated and exercised in a consistent manner. In broad terms the safety case is a document – meant to be kept up to date – in which the operator sets out its approach to safety and the safety management system which it undertakes to apply. It is, on the one hand, a tool for internal use in the management of safety and, on the other hand, a point of reference in the scrutiny by an external body of the adequacy of that management system – a scrutiny which is considered to be necessary for maintaining confidence on the part of the public.

This may include quantified risk assessment processes to determine the risk benefit balance of different precautionary options on a relative risk basis.
2.3 Hazard Assessment to Precaution Assessment Paradigm Shift

(Paradigm shift is used here in the meaning of the term as used by Thomas Kuhn).

The idea of target-levels-of-risk or safety has been under intellectual siege for some time, probably commencing from the early nineties with the failed attempt by the UK Health & Safety Executive to introduce target levels of individual and societal risk.

The idea of due diligence rather than target risk levels risk appears to have been reflected by the 2003 move by ANCOLD (the Australian National Committee on Large Dams) to eliminate any lower limit of risk ‘acceptability’, which is not atypical.


Further, mandating risk assessments may be a barrier to the implementation of risk controls. For example, where hazards and risks are well known and there are universally accepted control measures, a duty holder may identify the hazard and implement the appropriate control without doing risk assessment. In these cases, a risk assessment would yield no new knowledge and would be likely to delay the implementation of controls.

The introduction of the Australian Federal Labor Government’s OHS Act (described later in the paper) will complete the risk management paradigm shift from hazard to precaution assessment consistent with the common law position.

3. WHY THE PARADIGM CONFLICT?

When risk became popularised as a management concept in the late 20th century, it was on the basis that risk was essentially scientific in nature. This new risk science meant that society’s risk acceptability levels could be objectively determined and that technical people could repeatedly agree on the actual level of risk associated with a situation or circumstance. The idea was that this would enable effective and fair risk allocation and control. Amongst other aspects, such a belief gave rise to the ideas of target levels-of-risk and safety.

As it emerged, it is simply not true that risk is wholly scientific in nature. Two risk experts never agree on the precise level of risk. The reason seems to be that risk is not wholly a property of the natural-material time-space universe. There are elements of human values embedded throughout. The future uncertainty under consideration is a human one with all of the encoded values this implies.

Many thoughtful risk writers have also commented on the difficulty of using risk targets and the QRA (quantified risk assessment) processes they imply. Two Australian writers are quoted below:

Mark Tweeddale (2003): In the case of the process industry, most of the major disasters in recent years have resulted primarily from failures of management systems, which would not have been included in the quantitative assessment of risk, and not from random equipment failures such as are statistically assessable using data from data banks. This is a most serious limitation...

Andrew Hopkins (2005). The most significant risk is poor management and this is inherently unquantifiable. QRA is largely inappropriate, therefore, as a means of deciding whether risk has been driven to a sufficiently low level. In particular, it should never be allowed to override sound professional judgments about necessary risk reduction measures. It can, however, have more modest uses, such as helping to determine priorities.

The inconsistency in individual and societal risk criteria between states, especially Victoria and NSW dating from the mid-nineties was and is problematic. The flexible choice of societal risk criteria for the land use planning criteria by NSW Department of Urban Affairs & Planning (DUAP) for the Kurnell Peninsula QRA in the 2007 study has made some people wonder as to the exact meaning of such criteria.

To date, the authors are not aware of target-levels-of-risk (and the supporting QRA process) ever surviving post-event common law judicial scrutiny. Of course, such an observation does not wholly invalidate the use of QRA models in risk decision making, but it suggests that they can only be used on a relative risk basis as Andrew Hopkins suggests above.

4. AUSTRALIAN LEGAL CONTEXT

4.1 Negligence

According the Butterworths Concise Australian Legal Dictionary:

Negligence is an action in tort law, the elements of which are the existence of a duty of care; breach of that duty; and material damage as a consequence of that breach of duty. A duty of care is a legal obligation to avoid causing harm, and arises where harm is foreseeable. The type of damage, not the extent must be foreseeable:
Hughes v Lord Advocate (1963) AC 837.

The overall situation with regards to case law negligence in Australia is perhaps best summarised by Chief Justice Sir Harry Gibbs of the High Court of Australia (1982):

Where it is possible to guard against a foreseeable risk, which, though perhaps not great, nevertheless cannot be called remote or fanciful, by adopting a means, which involves little difficulty or expense, the failure to adopt such means will in general be negligent.

4.2 Due Diligence

R2A has always understood that the primary defence against negligence claims is due diligence. The courts test to see (with the advantage of 20:20 hindsight) whether all reasonable practicable precautions were in place based on what was known at the time in terms of the balance of the significance of the risk (likelihood and consequence) versus the effort required to reduce it. This is probably best represented by Figure 3 below, adapted from Sappideen and Stillman (1995).

![Figure 3. How would a reasonable defendant respond to the foreseeable risk?](image)

Effort includes expense which refers to money, difficulty and inconvenience, how difficult the precaution is to implement and monitor, and utility of conduct refers to what other disbenefits might occur due perhaps to conflicting responsibilities.

This balance is always what the authors' have understood to be the case law meaning of ‘reasonably practicable’. This means that there is no lower limit to risk and the focus is on precautions rather than hazard risk levels. That is, the objective is to demonstrate that all reasonable practicable precautions are in place, not that a target level of risk or safety has been achieved.

In an appeal to the High Court of Australia (1980) (Shipping Corporation of India Ltd v Gamlen Chemical Co. A/Asia Pty Ltd), Stephen J noted:

This appeal involves interpretation of the Hague Rules. During heavy weather in the Great Australian Bight, the severity of which was unusual but not unforeseeable, a number of drums of cleaning solvent stowed in a ship's hold broke adrift, were damaged and their contents lost. The means of securing them in place in the hold had been inadequate.

Under the Hague Rules (to which Australia is a signatory), Article IV Rights and Immunities states:

1. Neither the carrier nor the ship shall be liable for loss or damage arising or resulting from unseaworthiness unless caused by want of due diligence on the part of the carrier to make the ship seaworthy, and to secure that the ship is properly manned, equipped and supplied...

Whenever loss or damage has resulted from unseaworthiness, the burden of proving the exercise of due diligence shall be on the carrier or other person claiming exemption under the section.

Reynolds J.A. summed up the conclusion of the Court of Appeal of the Supreme Court of NSW in the following words:

Loss or damage does not arise or result from perils of the sea where negligence is a concurrent cause. Where negligence allows or facilitates the perils of the sea to inflict damage on cargo, then in all relevant respects the loss or damage arises or results from the negligence. The perils of the sea must be guarded against by the use of due care.

The judges of the High Court unanimously dismissed an appeal to the High Court and supported the view of the NSW Court of Appeal summarised by Reynolds J.A. above.

4.3 The Work Health and Safety Act

The Australian, State, Territory and New Zealand Workplace Relations Ministers’ Council (WRMC) chaired by Prime Minister Gillard, at a meeting on 18 May 2009, agreed to a framework for uniform OHS laws. The Work health and Safety Act was consequently prepared by the Parliamentary Counsel's Committee and approved by the Workplace Relations Ministers’ Council on 11 December 2009 and revised on 11 May 2010. It is planned to be implemented in all Australian jurisdictions on 1 January 2012. This imposes due diligence on responsible officers as follows:

27 Duty of officers

(1) If a person conducting a business or undertaking has a duty or obligation under this Act, an officer of the person conducting the business or undertaking must exercise due diligence to ensure that the person conducting the business or undertaking complies with that duty or obligation.
The Act specifies that: officer of a body corporate means officer within the meaning of section 9 of the Corporations Act 2001 of the Commonwealth. The Act notes that:

(1) A person who makes, or participates in making, decisions that affect the whole, or a substantial part, of the business or undertaking of a Government department, public authority or local authority is taken to be an officer of the Crown or that authority for the purposes of this Act. 
(2) A Minister of a State or the Commonwealth is not in that capacity an officer for the purposes of this Act.

The meaning of due diligence is considered:

(5) In this section, due diligence includes taking reasonable steps:
(a) to acquire and keep up-to-date knowledge of work health and safety matters; and
(b) to gain an understanding of the nature of the operations of the business or undertaking of the person conducting the business or undertaking and generally of the hazards and risks associated with those operations; and
(c) to ensure that the person conducting the business or undertaking has available for use, and uses, appropriate resources and processes to eliminate or minimise risks to health and safety from work carried out as part of the conduct of the business or undertaking; and
(d) to ensure that the person conducting the business or undertaking has appropriate processes for receiving and considering information regarding incidents, hazards and risks and responding in a timely way to that information; and
(e) to ensure that the person conducting the business or undertaking has, and implements, processes for complying with any duty or obligation of the person conducting the business or undertaking under this Act; and
(f) to verify the provision and use of the resources and processes referred to in paragraphs (c) to (e).

The authors suspect that the courts will be unable to use the above as a final definition of due diligence and will inevitably revert to case law for inspiration, especially the opinion of the High Court described above.

5. CASE STUDIES
5.1 Land Use Planning for Major Hazards

An example of such difficulties is the implication for land use planning around major hazard fuel depots after the Buncefield incident in the UK on 11 December 2005. Here an unconfined petrol vapour cloud exploded, creating substantial explosive over-pressures over a large area with commensurate damage. The lack of deaths and injuries was due only to no people being present at the time.

Before this incident, unconfined vapour cloud ignitions were believed not to create explosions, only deflagrations (rapid flame fronts). That is, without any form of containment the flame front remains sub-sonic and no explosive over-pressures occur. Explosive over-pressures due to vapour cloud ignition were not considered credible and so were excluded from tank farm QRAs.

After Buncefield, this approach is clearly no longer acceptable, as the Buncefield investigative committee agreed. Nevertheless, such explosive events remain very unlikely, as a large number of circumstances need to align to produce them. These include numerous collective human errors, failed engineering controls, very stable weather and an unusual topological conditions.

This is well documented in the various reports of the investigative committee and in: Illustrative model of a risk based land use planning system around petroleum storage sites prepared by DNV Energy for the Buncefield Major Incident Investigation Board in June 2008. It seems that the investigative committee recommends the use of individual and societal risk targets for land use planning purposes an example of which is shown in Figure 4.

In R2A's experience, a risk target approach has never been able to pass the common law due diligence test. This may not matter whilst regulations under legislative fiat required QRAs to achieve target levels of risk and safety. But the Australian Federal Labor government's model OHS act (which specifically includes the storage and handling of dangerous goods) appears to require that all reasonable precautions consistent with case (common) law to be in place, overturning these existing approaches.
For example, if a plot of the over-pressures at Buncefield were to be mapped to any major hazard fuel farm in Australia, the area that can cause fatalities is huge. If the event is discounted by the unlikelihood of its occurrence in accordance with the risk target approach and individual risk contours are developed, it is a much smaller area. Under most current planning regimes, structures developed beyond such individual risk contours need only be building code compliant.

Most deaths and injuries due to explosions, especially in dwellings, occur as a result of flying debris, particularly roof tiles and glass shards, rather than over-pressure. Using the common law test of the balance of the significance of the risk vs the effort required to reduce it, the cost of the provision of sheet metal roofs and laminated glass windows rather than tiles and ordinary glass, especially for new structures is very, very small indeed.

If buildings are permitted between the designated individual risk contour and accelerative glass over-pressure limits without such precautions, and an explosion resulting in deaths or injuries occurs, then those responsible for approving and building such structures (town planners, developers, architects, engineers, builders etc) may be found negligent under common law and the Australian Federal Labor government’s proposed OHS legislation.

5.2 Lapstone Cutting Due Diligence Review

Large rocks falling onto tracks in cuttings (such as that shown in Figure 5) is a major issue that affects many Australian railways.

If a typical hazard based risk assessment process is undertaken, the focus is on preventing rockfalls. This involves identifying all the sites that may create a rockfall and assessing and ranking them on some quantified risk (likelihood and consequence) basis, usually down to target levels of risk or safety.

![Figure 5. Large Fallen Rock](image)

The difficulty is, that it does not matter how much work is undertaken, preventing all rockfalls all the time is not possible. The fact that the probability of a serious rockfall is considered to have been made to be vanishingly small does not help, post event. Once the event happens the fact is certain in court.

![Figure 6: Rockfall Threat Barrier Diagram](image)
The alternative approach adopted for Railcorp was to use threat-barrier analysis based around the legal loss of control points. In the example shown below, the primary hazard is not falling rocks, rather it is the loss of control of train energy if a big enough rock is struck.

The advantage of this approach is that the focus is on examining the totality of precautions available to address the issues rather than just trying to eliminate the obvious immediate hazard, rockfalls. Of course, this does not mean that obvious rockfall sites ought not to be addressed. The point is that this is done in the context of all the available precautions and all the other cuttings for which Railcorp is responsible.

6. WHAT IS THE DIFFERENCE BETWEEN THE RISK PARADIGMS

The two tables below attempt to describe the practical, outcome differences between the two paradigms.

<table>
<thead>
<tr>
<th>Precaution based risk management</th>
<th>Hazard based risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus is on solutions and the way forward.</td>
<td>Focus is on problems and their complexity.</td>
</tr>
<tr>
<td>Focuses stakeholders on common ground.</td>
<td>Causes stakeholders to analyse issues from a personal or local perspective creating suspicion, arguments and discord, often requiring resolution via a legal or quasi-legal process.</td>
</tr>
<tr>
<td>Facilitates decision justification with multiple stakeholders with overlapping interests.</td>
<td>For difficult problems, it creates an extraordinary level of detailed unrepeatable analysis that is unclear to the different stakeholders.</td>
</tr>
<tr>
<td>Understood by senior decision makers.</td>
<td>Almost impossible for senior decision makers to comprehend due to the analytical complexity and specialist skill set required.</td>
</tr>
<tr>
<td>Consistent with common (case) law precautionary scrutiny.</td>
<td>Fails common law scrutiny. Can only be sustained by statute law (and supporting regulation).</td>
</tr>
<tr>
<td>Top down and contextually sound.</td>
<td>Bottom up and often out of context.</td>
</tr>
<tr>
<td>Transparently deals with all known credible issues.</td>
<td>Can lose sight of the main issues amongst the detail.</td>
</tr>
<tr>
<td>Accepts that risk is primarily a human construct with some scientific aspects like consequence modelling.</td>
<td>Suggests risk analysis is wholly scientific and provides consistent, repeatable results. This is clearly not so. Two independent hazard analysts never come up with the same answer.</td>
</tr>
<tr>
<td>Holistic viewpoint.</td>
<td>Results depend on the particular analysis metaphor adopted and so results can have a skewed meaning.</td>
</tr>
<tr>
<td>Recognises that risk issues are unique to place, time and culture and may need different risk management tools and techniques to solve.</td>
<td>Assumes that all risk issues are equally tractable to the same risk management process.</td>
</tr>
<tr>
<td>Produces a small number of cost effective precautions to address multiple issues.</td>
<td>Produces a large number of difficult-to-justify individual precautions for each issue, which potentially work at cross purposes or duplicate tasks across the organisation.</td>
</tr>
<tr>
<td>Ensures identified good practice is applied to known issues.</td>
<td>Tends to reinvent the wheel for each identified issue.</td>
</tr>
</tbody>
</table>

Table 1. Precaution Based Risk Management

The diagram below describes the situation in another way. Whilst target levels of safety and supporting QRA processes are called up in statute and supporting regulation, it did not particularly matter if the common law criteria were not met. Statute law takes precedence over common law. But once due diligence is called up by statute (as is expected with the introduction of the Australian Federal Labor government’s national OHS approach), the inconsistencies will inevitably be tested in court, at which point the common law due diligence position is expected to hold sway.

Figure 7: Primary Approaches to Risk Studies
7. CONCLUSION

Unless the risk issue under consideration is truly novel, most of the precautionary options available to address any particular problem have already been tried by others. In the first instance at least, the precautionary, due diligence approach suggests that by firstly considering these options enables a solution based, generative, can-do outcome amongst stakeholders. It also provides an arguable case before the courts, post event.

The alternative hazard based approach to risk causes confusion, aggravation and expense. And, unless protected by statute or regulation, the quantified risk assessment (QRA) version presents liabilities for decision makers that use the results of such studies as there can be no defence, once the thought to be rare event occurs.

8. REFERENCES


Australian, State, Territory and New Zealand Workplace Relations Ministers’ Council (WRMC) Communiqué (11 November 2009).


High Court of Australia. Shipping Corporation of India Ltd v Gamlen Chemical Co A/Asia Pty Ltd [1980] HCA 51; (1980) 147 CLR 142.

Hopkins, Andrew (2005). Safety, Culture and Risk: the organisational causes of disasters. CCH Australia Limited. Chapter 12 which is a critique of risk assessment and acceptable risk is particularly relevant to this paper.


