



# Is Risky Business Our Business?

Wendy McGuinness\* discusses risk management and the application of the Risk Management Standard AS/NZS 4360:1999.

ACCOUNTANTS are service providers. We go to enormous lengths to provide accurate and meaningful financial and management information to decision-makers, and to provide reliable, independently audited financial reports to stakeholders. Accountants, however, have not traditionally seen the "risk-management" business as part of their natural role.

## Our obligations

As members of society, we must accept that bad events can and do occur, and that risks, if not identified and managed at the beginning of a project, can have major consequences. Past examples where the benefits were thought to be greater than the costs have included:

- ◆ Thalidomide — the intended benefit was to reduce nausea in pregnant women. The consequence was that some babies died or were born with disabilities.
- ◆ Animal feed — the benefit was to save money by feeding animal by-products to cattle. The consequence was that some humans developed BSE and died as a result of eating contaminated beef.
- ◆ Introduction of possums — the intention was to establish a fur trade. The consequences have been enormous damage to the environment and an increase in the spread of TB.
- ◆ Introduction of gorse — the benefit was a sturdy hedge with attractive yellow flowers. The consequences were damage to the environment.

There are also numerous examples, not so well known, where individuals

have prevented major catastrophes, because they looked beyond the intended benefits of a new initiative.

As recently as August 2000, scientists at the Roslin Institute, near Edinburgh, stopped research into the use of transplanted pig organs into humans because the "risk of unleashing potentially deadly new viral diseases was too great".

Ironically, Australian scientists have responded by saying that they will "press ahead with research into pig transplants in humans" because they "are confident no such transmission occurs".

The challenge is how to standardise risk analysis across all aspects of decision-making where the risk of one person's action can have a major impact on others.

## Risk Management Standard AS/NZS 4360:1999

In April 1999, in an attempt to provide a generic guide for the establishment and implementation of the risk-management process, the Australian Council of Standards and the New Zealand Council of Standards jointly published a Risk Management Standard (AS/NZS 4360:1999).

The Standard is a very useful tool that has been sorely needed in the marketplace. It requires, however, a large amount of personal judgement by the analyst as it is highly value-laden at each stage of the process. Any stakeholder must therefore either read the full risk-management document, or trust the skills and professionalism of an independent auditor or decision-maker to be confident that decisions are

appropriate. To this end, this article attempts to identify what is critical, what is difficult and why. (See Figure 1.)

## Context

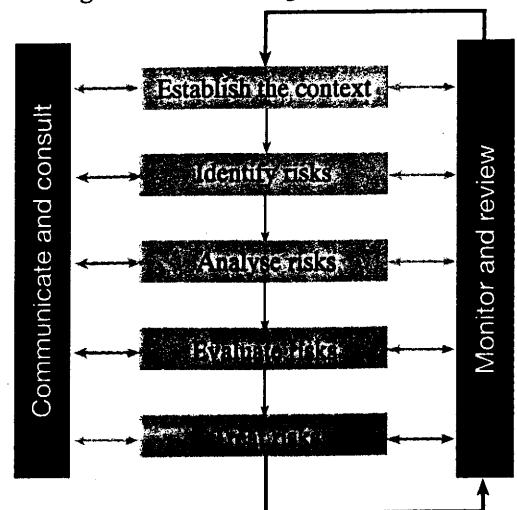
It is critical to determine the context within which a new activity is being proposed.

In New Zealand, a number of Acts require the scope and source of risks to be interpreted very broadly. Both the Resource Management Act 1991 and the Hazardous Substances and New Organism (HSNO) Act 1996, clearly specify that the purpose of these Acts is to provide for social, economic and cultural well-being for this generation and future generations, and to safeguard the life-supporting capacity of air, water, soil and eco-systems.

This broad definition would fit with what American literature calls a full CRA (Comprehensive Risk Analysis).

*Identifying and weighing sources of risk* — A framework for determining the scope and identifying the sources (or

Figure 1: Risk Management Overview



(AS/NZS 4360:1999 — page 8)

categories) of risks is provided in *Figure 2*. (A more general list is also provided in Appendix D of the AS/NZS 4360:1999.)

For example, if *Figure 2* were applied to the risks resulting from the use of genetic modification technology (which is currently being assessed by the Royal Commission of Inquiry into Genetic Modification), we would expect to see specific risks, such as those in square brackets. This is not a comprehensive list of endpoint risks, but is provided to illustrate how the model should be used.

The objective of applying *Figure 2* is to obtain a comprehensive list of risks that are grouped in a useful way. An arrangement in which each risk fits perfectly in only one category is not important.

One analyst will identify and weigh sources of risk differently from another, consequently both the selection and weighting is extremely value laden. What is critical is that the reason for the selection and the weighting of each source of risk is easily apparent to the stakeholders.

*Figure 2* is not intended to demonstrate a fixed formula, but rather a useful approach that can be changed to meet the specific objectives and scope of the project.

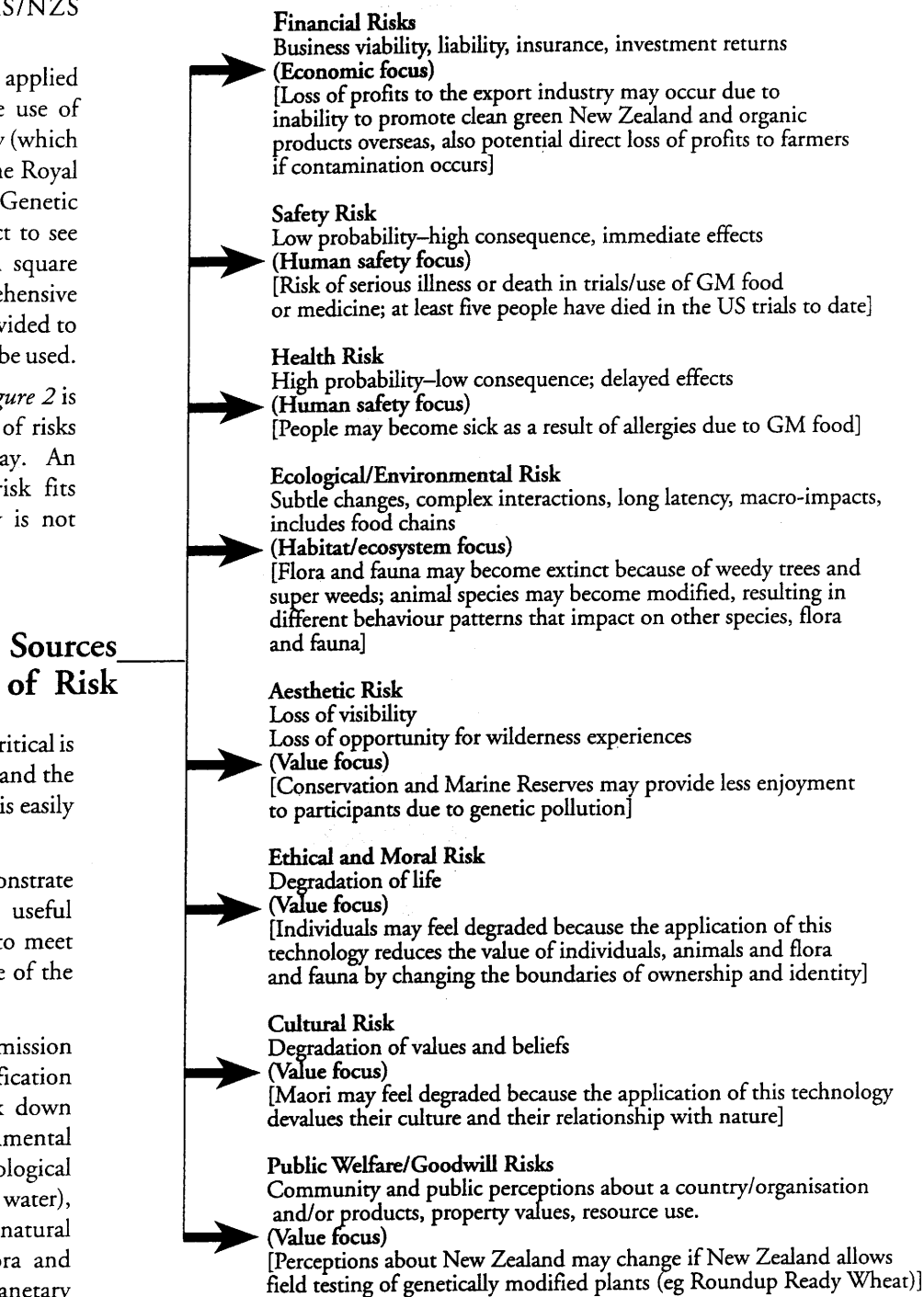
For example, the Royal Commission of Inquiry into Genetic Modification may find it beneficial to break down "Sources of Ecological/Environmental Risks" into (i) Damage to biological systems (eg effects on wildlife, soil, water), (ii) Reduction of New Zealand natural resources (eg loss of native flora and fauna) and (iii) Damage to planetary systems (eg loss of arable land, loss of biodiversity).

**Defining acceptable risk; who decides?**

—Although not defined in the Standard, the definition of acceptable risk is another critical aspect of the process. Proponents for a project that may involve environmental risk could argue that we do not live in a zero-risk society, and we all live with the concept that some level of risk is acceptable.

The reality is that if we travel by air or cross the road, it is the "individual's

**Figure 2: Major Sources of Risk and Their Focus**



(Adapted from both Kolluru and Louvar)

choice" to take that risk based on the information available.

Heimann uses the example of the ill-fated Challenger launch. With hindsight it is easy to say that the launch was a mistake, but in defending its position, NASA accepts it cannot eliminate risk altogether, and that it must carry out its mission while lacking information about the technology employed and the

environment in which it operates. NASA considered the launch of Challenger an "acceptable risk". Participants were advised of the risk and they acknowledged it.

Determining an acceptable risk is an important function of many government agencies. Who decides what is acceptable is obviously a critical determinant to the outcome of the project.



**Figure 3: Modifying the CBA**

| Assessment Method: | Conventional CBA   | Modified CBA  | Cost Effectiveness Analysis   | Trade-off Analysis and Ecocentric Preservation  |
|--------------------|--|---|---|---|
| Value:             | Private values of individuals and organisations                              | Private and publicly held values in legislation                         | Private and publicly held views from a human perspective  | Private and publicly held views from a human perspective plus rights of all other life forms on the planet              |
| Tools used:        | Monetary only – with little evaluation of the environment, health and safety | Monetary with monetary evaluation of the environment, health and safety | Monetary and non-monetary evaluation of the environment, health and safety, and some social and cultural considerations | Monetary and non-monetary evaluation of the environment, health and safety, and some social and cultural considerations |
| Objective:         | Utilitarian efficiency   | Sustainable development, efficiency and equity                          | Fixed environmental standards approach  | Restore and preserve intrinsic values   |

(Adapted from Coker)

**Identify risks**

Under each of the sources of risk can be numerous specific risks. To determine these, the Standard refers to exploring “What can happen and how can it happen?” The Standard also adds that ensuring a “comprehensive identification is critical, because a potential

risk not identified at this stage is excluded from further analysis.”

The Standard refers to “events” being an incident or situation, which can then be reviewed using various tools to determine the specified event. This can be called the top event or in American literature — the endpoint.

To generate these endpoints requires sufficient understanding of the inter-relationships between events and between possible outcomes and perceived outcomes.

It is more difficult than it initially appears.

Analysts can use such tools as Event Tree Analysis to map the risks.

Fault Tree Evaluations and many other tools and social research techniques can help identify the endpoints.

It is critical to obtain agreement on these endpoints and their weighting by stakeholders.

If stakeholders consider a specific risk (or endpoint) is not identified or weighted correctly, they will have concerns about the final decision.

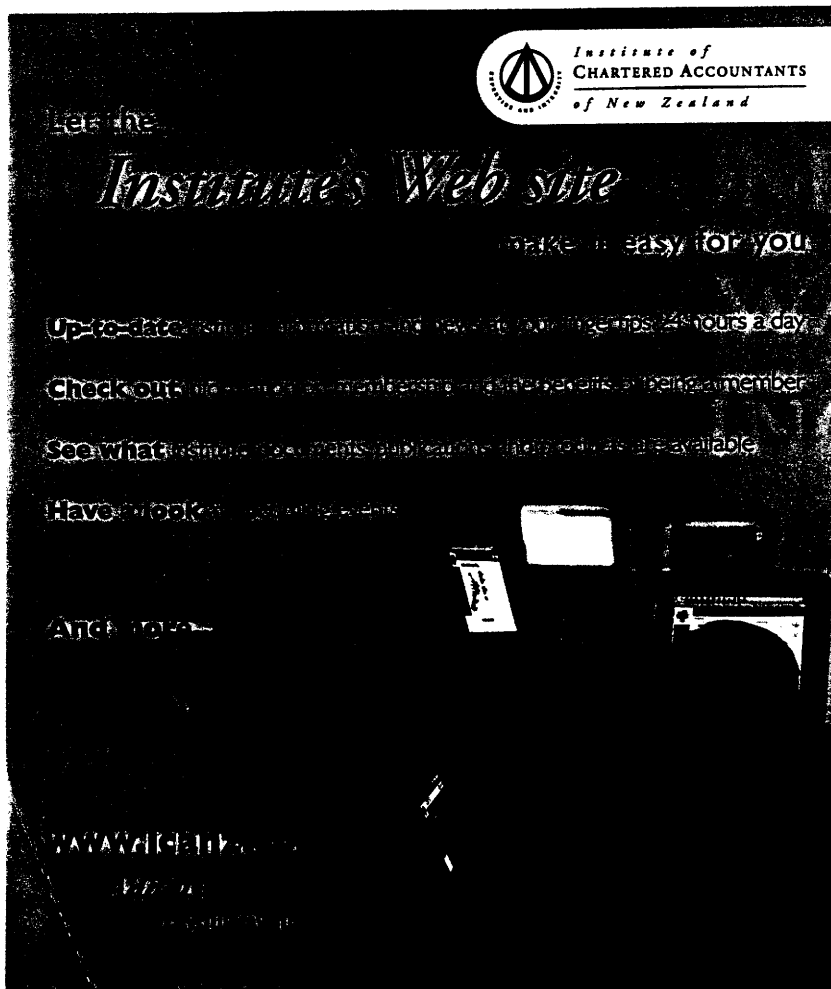
**Analyse risks**

Risk analysis has always been considered a part of management accounting.

However, accountants must either create new methods or adapt old ones to meet these new information requirements. (See Figure 3.)

**Cost Benefit Analysis** — The original Cost Benefit Analysis (CBA) model must be modified to meet the “context” discussed above.

Figure 3 above gives a very brief and simplistic view of the aspects accountants may consider when preparing or reviewing reports of this nature.



The Standard does not refer to CBA, but the weighing of costs and benefits is referred to in New Zealand legislation and the balancing of negative and positive consequences is discussed in a similar publication — *A Basic Introduction to Managing Risk using the AS/NZS 4360:1999* — under the reference HB 142:1999. This states “when risks and opportunities are being considered together, a ‘two directional’ scale of consequences may be appropriate.” This would be a way of meeting the needs of weighing the costs with the benefits using non-monetary methods. An example is shown on page 29, in HB 142:1999.

The conventional CBA does contain a number of weaknesses. Broadly speaking it does not take into account the:

- (i) Distributional effects between parties where one party bears the risk and another party obtains the benefits
- (ii) Distributional effects between parties where one generation obtains the benefits, but leaves the burden of risk to future generations
- (iii) Trading off of “worst case” effects (rather than CBA that tends to look at “expected value” of positive and negative impacts)
- (iv) Trading off of public-good objectives (the specific objectives are not mentioned or are lost in the summing-up process).

*(i) and (ii) The inequity of distributional effects between parties*

Although not specified in the Standards, New Zealand legislation does require us to take into account “the distributional effects of the costs and benefits over time, space, and groups in the community” when evaluating risks, costs and benefits — HSNO Regulations (Methodology) 1998, clause 13(c).

We therefore must find some way of logically balancing the “rights of those that bear the risks, yet receive no benefits” from the proposal against those who “receive all the benefits but do not bear the risks”.

Take the example of a multinational like Monsanto applying to ERMA to

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field test in New Zealand a crop of genetically modified wheat. If an endpoint risk occurs, farmers and the environment may bear the burden, while Monsanto moves its field testing to other shores.

Stakeholders who bear the risk but do not receive the benefits will consider the magnitude of the risk as the key determinant as to whether the project should go ahead. The fact that there is a probability that the risk can occur is sufficient; the probability of its occurrence is irrelevant.

Therefore, stakeholders who bear the potential burden will argue for no risk (zero risk). Any risk other than zero risk is therefore unacceptable. Their demands are legitimate and must be considered as a key determinant in any decision. As analysts, we must ensure that when this inequity occurs, it is identified, documented and is a major factor when considering the final decision.

*(iii) and (iv) Worst-case scenarios and trade offs*

Also not referred to directly in the Standard, is a need to find a way of trading off or balancing the public-good objectives, being the desirable outcomes like ecological diversity and quality of life, with other desirable outcomes like economic growth and employment.

Such trade offs are difficult because of the inequity between citizens, the lack of information about what is important and how we value the quality of our lives, the high level of uncertainty, the application of “worst-case scenario” analysis, the probabilities, the amount of irreversibility, and the fact that the “risks are long-term for future generations” and the “benefits are often short-term and may benefit only those currently living”.

To be able to compare apples with apples, we need some method of bringing those future risks into current terms; in the same way we use Net Present Values

**Figure 4: Qualitative Risk Analysis Matrix — Level of Risk**

|                    | Consequences            |                    |                     |                   |                         |
|--------------------|-------------------------|--------------------|---------------------|-------------------|-------------------------|
|                    | Insignificant<br>Low FL | Minor<br>Medium FL | Moderate<br>High FL | Major<br>Major FL | Catastrophic<br>Huge FL |
| <b>Likelihood</b>  | 1                       | 2                  | 3                   | 4                 | 5                       |
| A (almost certain) | H                       | H                  | E                   | E                 | E                       |
| B (likely)         | M                       | H                  | H                   | E                 | E                       |
| C (moderate)       | L                       | M                  | H                   | E                 | E                       |
| D (unlikely)       | L                       | L                  | M                   | H                 | E                       |
| E (rare)           | L                       | L                  | M                   | H                 | H                       |

Note: The number of categories should reflect the needs of the study.

**Legend**

- E: extreme risk; immediate action required
- H: high risk; senior management attention needed
- M: moderate risk; management responsibility must be specified
- L: low risk; manage by routine procedures
- FL: financial loss

(AS/NZS 4360:1999 – Table E3)



in pure financial analysis. We also need more information on how the public would like such dilemmas resolved. Trade-off Analysis is the method promoted to deal with these weaknesses.

Ashford (from Finkel), re-affirms that what is missing from a conventional CBA is an explicit valuation of "what is traded off for what".

For example, trading costs and benefits to consumers and producers "now", for a variety of costs and benefits over say the next three generations, means that other options (that meet those same objectives) will also be assessed.

For example, with international public concern over genetically modified food, a strategic option that should be evaluated by government is the trade off of the net effects to New Zealand of producing GM food or not producing GM food. Not to consider the comprehensive strategic options would be irresponsible and not in New Zealand's best interests.

#### *Scoring and ranking of endpoint risk*

— The concept of scoring the level of endpoint risk is highly value laden. A frequently used method is to score the risk by multiplying (or using some other

measure as shown in *Figure 4*) the relationship between the probabilities or likelihood of the risk occurring, by the magnitude or consequences of the risk if it does occur.

Once again it seems logical enough, although it is extremely dependent on who does the evaluation and extremely risky if not used together with other tools for understanding where the potential risks may lie. It is after all only a sum of two completely different aspects of risk.

As stated in the Standard, the stakeholders should be in agreement as to the definition of magnitude and consequence in the early stages of the process. Assessments such as "likely" or "moderate", must have specific definitions that relate directly to the context.

Time periods or specifically stated consequences should be included.

Scoring and ranking risk is only meaningful if you understand the basis of the judgement. O'Brien (from Finkel) states that there are four problems with risk ranking:

- the intensely personal nature of priorities,
- the inter-relatedness of risks,
- the failure to consider moral and social risks, and
- that the methodology of ranking by nature admits that an overall solution cannot be obtained — therefore someone has to lose.

O'Brien challenges that we must find a better methodology.

#### **Evaluate risks**

Evaluating the risk involves reviewing the endpoint risk (risk identification and analysis) against the pre-established criteria (context), so that a decision can be made as to whether the potential negative effects or the net effects are acceptable or not.

What is vital to the evaluation process is ensuring that we have a good understanding of the quality and quantity of information we have to make this decision. This is best summarised by asking three questions: (i) What do we know? (ii) What do we know, that we don't know, and (iii) What we do not know that we don't know?

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Obviously, if the analyst and the decision-maker consider there are a lot of unknowns in (ii), it is therefore also likely there is a large number of complete unknowns as defined in (iii).

Consequently, a major determinant when making the final decision is the degree to which the potential magnitudes of any or all the risks are known. If a decision-maker considers insufficient factual information is available to determine all the potential risks (being both the probabilities and magnitude), the decision should be postponed until sufficient information is obtained. Therefore, the decision-maker should demand more of (i) "what we know" to reduce the amount that "we do not know" as defined in (ii) and (iii) above.

In cases where one person's actions may have a detrimental impact on others, a precautionary approach should always be applied to ensure the rights of all potential parties are protected.

#### **Treat risks**

The objective is to ensure that if acceptable risks are taken, they are managed to reduce any adverse effects, through the implementation of controls, monitoring and disaster plans.

#### **Risk communication and monitoring**

It could be argued that risk communication is a public relations exercise, but it is far more than that. It is really the communication of the methodology, the level of qualitative and quantitative information available, the decision-making process, the definition of acceptable risk, and if and when things do go wrong — the degree to which the organisation or government is obliged to rectify the consequences and/or pay damages.

The method and timing of how and when a disaster is communicated to the public has a major impact on the health of individuals, the environment, the ability to rectify the problem and the liability for the organisation and/or government agency involved (Powell).

In some cases, this can have substantial and catastrophic impacts. Some international examples include Mad Cow Disease and Chernobyl. In New Zealand, examples would include the Hepatitis C

blood transfusions and the cervical cancer screening in Gisborne.

Other less tragic examples, but still economically devastating for the people involved, are the arrival of the bee mite

and the tussock moth, (the latter of which resulted in the costly spraying of parts of Auckland). When risks do occur we must have in place both the means and the method to minimise the consequences.

*\*Wendy McGuinness has her own consultancy firm McGuinness and Associates. She is interested in ensuring that decision-makers have timely, accurate and meaningful information when making decisions about the environment. E-mail: wmcg@paradise.net.nz*

## Summary

In the *Journal* in September, the concept of the Triple Bottom Line (ethics, profit and environment) is proposed as the future conceptual framework for accounting. We have also seen the emergence of "green accounting" with Bruce Gilkison's book *Accounting for a Clean Green Environment* where he discusses the rapid reform process that has occurred in New Zealand to protect and preserve our health and our environment. New legislation, like the Resource Management Act 1991, the Conservation Act 1987, the Environment Act 1986 and the Hazardous Substances and New Organisms Act 1996, places increasing obligations on organisations to consider the needs of the public. Gilkison states: "Accountants need to be aware of current legislation and the drivers of future government policy."

Internationally, the task of analysing risk-related information is being met by private risk assessment firms. To what degree accounting firms in New Zealand and overseas attempt to address this new market is yet to be seen. If we are in the business of providing "quality information for stakeholders to make decisions", are we also in the business of "risk management"?

An enormous amount of work still needs to be done, in particular to improve or develop new methods of identifying and assessing environmental aspects of risk. For example, the Australian and New Zealand Council of Standards recently produced a new publication called the *Environmental Risk Management Handbook – HB 203*.

In time, the production and auditing of risk management information will become as routine as the production and auditing of the annual financial report. What is of concern is the number of catastrophes that may need to occur in order to drive the demand for a logical and balanced approach to the preparation and auditing of such reports. If we do not identify and efficiently manage these risks, we do both ourselves and future generations a grave injustice. Chartered Accountants, as experienced providers of information, are well placed to both demand and execute high quality risk management reports.

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