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Australian/New Zealand Standard™

Managing risk in projects—Application guidelines

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee QR-005, Dependability, with input from the Joint Standards Australia/Standards New Zealand Committee OB-007, Risk Management.

The objective of this Standard is to provide principles and generic guidelines on managing risk and uncertainty in projects.

This Standard is identical with, and has been reproduced from IEC 62198 Ed.2.0 (2013), *Managing risk in projects—Application guidelines.*

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO 31000	Risk management—Principles and guidelines	AS/NZS ISO 31000	Risk management—Principles and guidelines

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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INTRODUCTION

Every project involves uncertainty and risk. Project risks can be related to the objectives of the project itself or to the objectives of the assets, products or services the project creates. This International Standard provides guidelines for managing risks in a project in a systematic and consistent way.

Risk management includes the coordinated activities to direct and control an organization with regard to risk. ISO 31000, *Risk management – Principles and guidelines*, describes the principles for effective risk management, the framework that provides the foundations and organizational arrangements for designing, implementing, monitoring, reviewing and continually improving risk management throughout an organization and a process for managing risk that can be applied to all types of risk in any organization. This standard shows how those general principles and guidelines apply to managing uncertainty in projects.

This standard is relevant to individuals and organizations concerned with any or all phases in the life cycle of projects. It can also be applied to sub-projects and to sets of inter-related projects and programmes.

The application of this standard needs to be tailored to each specific project. Therefore, it is considered inappropriate to impose a certification system for risk management practitioners.

The guidance provided in this standard is not intended to override existing industry-specific standards, although the guidance can be helpful in such instances.

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AUSTRALIAN/NEW ZEALAND STANDARD

Managing risk in projects—Application guidelines

1 Scope

This International Standard provides principles and generic guidelines on managing risk and uncertainty in projects. In particular it describes a systematic approach to managing risk in projects based on ISO 31000, *Risk management – Principles and guidelines*.

Guidance is provided on the principles for managing risk in projects, the framework and organizational requirements for implementing risk management and the process for conducting effective risk management.

This standard is not intended for the purpose of certification.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 31000, *Risk management – Principles and guidelines*

3 Terms and definitions

For the purpose of this document, the following terms or definitions apply.

3.1
project
unique process consisting of a set of coordinated and controlled activities, with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost and resources

Note 1 to entry: An individual project may form part of a larger project structure.

Note 2 to entry: In some projects the objectives are updated and the product characteristics defined progressively as the project proceeds.

Note 3 to entry: The project's product is generally defined in the project scope. It may be one or several units of product and may be tangible or intangible.

Note 4 to entry: The project's organization is normally temporary and established for the lifetime of the project.

Note 5 to entry: The complexity of the interactions among project activities is not necessarily related to the project size.

[SOURCE: ISO 10006:2003, 3.5] [1][1]

3.2
project management
planning, organizing, monitoring, controlling and reporting of all aspects of a project and the motivation of all those involved in it to achieve the project objectives

[1] References in square brackets refer to the Bibliography.

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[SOURCE: ISO 10006:2003, 3.6]

3.3
project management plan
document specifying what is necessary to meet the objective(s) of the project

Note 1 to entry: A project management plan should include or refer to the project's quality plan.

Note 2 to entry: The project management plan also includes or references such other plans as those relating to organizational structures, resources, schedule, budget, risk management (3.5), environmental management, health and safety management and security management, as appropriate.

[SOURCE: ISO 10006:2003, 3.7]

3.4
risk
effect of uncertainty on objectives

Note 1 to entry: An effect is a deviation from the expected — positive and/or negative.

Note 2 to entry: Objectives can have different aspects (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project (3.1), product and process).

Note 3 to entry: Risk is often characterized by reference to potential events and consequences, or a combination of these.

Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence.

Note 5 to entry: Uncertainty is the state, even partial, of deficiency of information related to understanding or knowledge of an event, its consequence, or likelihood.

[SOURCE: ISO Guide 73:2009, 1.1] [2]

3.5
risk management
coordinated activities to direct and control an organization with regard to risk

[SOURCE: ISO Guide 73:2009, 2.1]

3.6
risk management framework
set of components that provide the foundations and organizational arrangements for designing, implementing, monitoring, reviewing and continually improving risk management throughout the organization

Note 1 to entry: The foundations include the policy, objectives, mandate and commitment to manage risk (3.4).

Note 2 to entry: The organizational arrangements include plans, relationships, accountabilities, resources, processes and activities.

Note 3 to entry: The risk management framework is embedded within the organization's overall strategic and operational policies and practices.

[SOURCE: ISO Guide 73:2009, 2.1.1]

3.7
risk management policy
statement of the overall intentions and direction of an organization related to risk management

[SOURCE: ISO Guide 73:2009, 2.1.2]

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3.8
risk management plan
scheme within the risk management framework specifying the approach, the management components and resources to be applied to the management of risk

Note 1 to entry: Management components typically include procedures, practices, assignment of responsibilities, sequence and timing of activities.

Note 2 to entry: The risk management plan can be applied to a particular product, process and project (3.1), and part or whole of the organization.

[SOURCE: ISO Guide 73:2009, 2.1.3]

3.9
risk management process
systematic application of management policies, procedures and practices to the activities of communicating, consulting, establishing the context, and identifying, analysing, evaluating, treating, monitoring and reviewing risk

[SOURCE: ISO Guide 73:2009, 3.1]

3.10
risk treatment
process to modify risk

Note 1 to entry: Risk treatment can involve:

- avoiding the risk by deciding not to start or continue with the activity that gives rise to the risk;
- taking or increasing risk in order to pursue an opportunity;
- removing the risk source;
- changing the likelihood;
- changing the consequences;
- sharing the risk with another party or parties (including contracts and risk financing); and
- retaining the risk by informed decision.

Note 2 to entry: Risk treatments that deal with negative consequences are sometimes referred to as “risk mitigation”, “risk elimination”, “risk prevention” and “risk reduction”.

Note 3 to entry: Risk treatment can create new risks or modify existing risks.

[SOURCE: ISO Guide 73:2009, 3.8.1]

4 Managing risks in projects

Every project involves uncertainty that can lead to risk. These risks can relate to the objectives of the project itself (for example to complete the project within a specified time frame and budget) or to the requirements of the assets, products or services that the project creates (for example for a product to be safe, dependable and environmentally sustainable).

The consequences that could arise from uncertainty in a project can be beneficial as well as detrimental, so project risk management is directed not only to avoiding or reacting to problems but also to identifying and capturing opportunities. Taking account of project risks contributes to better decisions, better project outcomes and increased value for the stakeholders.

This standard is relevant to individuals and organizations concerned with any or all phases in the life cycle of projects. To obtain maximum benefit, risk management activities are initiated at the earliest possible phase of a project and continued through subsequent phases. However, project risk management can be initiated successfully at any point in the life cycle, providing appropriate preliminary work is undertaken. The process is scalable, so it can be

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used with both small and large projects and to individual phases of projects. It can also be applied to sub-projects and to sets of inter-related projects and programmes.

A typical set of project phases and their characteristics is shown in Table 1.

Table 1 – Typical phases in a project

Phase	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Phase label	Identify Concept	Select pre-feasibility	Design and develop feasibility	Deliver Implement Install	Operate and maintain	Abandon Dispose
Purpose	Appraising opportunities: determine whether the project could be worthwhile and alignment with business strategy	Selecting options: identify and appraise project development options and select the preferred one	Defining the project: finalize the scope and detail of the preferred option	Delivering the project: produce an operating asset or service, consistent with the agreed scope	Realising the benefits: evaluate the project outcome to ensure performance	Closure: ensure safe and acceptable closure
Focus of risk management activities	Strategic threats and opportunities	Risk-based options selection	Design and delivery strategy	Project delivery, test and handover	Operation and maintenance	Disposal and rehabilitation

It is common for each phase to culminate in a decision point (sometimes called a gate) at which executive approval is provided for progression and entry to the next phase.

Information on risks and risk management is an important part of the information provided to executives to support their decisions at each decision point. Information on risks and controls in each phase should also be handed over to the team managing the next phase of the project.

All executives and managers in the organizations associated with a project have a role in managing the risks associated with their decisions (Figure 1). This standard is intended for use by:

a) project directors and project managers who are part of an organization that owns or commissions the project or that will own or manage the assets, products or services the project will create;

b) members of project teams who are responsible for significant sub-projects, groups of activities or packages of work;

c) project owners or sponsors who are responsible for ensuring that the sponsoring organization's business interests in the project are maintained and that the expected outcomes and benefits are realised;

d) executives who have to approve the progression of the project through each gate and the expenditure associated with the subsequent phase;

e) peer reviewers who provide assurance to the executives who make approval decisions that the supporting information is comprehensive, accurate and reliable;

f) project directors and project managers who are part of a contracting organization, or a sub-contractor or supplier, that bids for or delivers some or all of the project and its associated assets, products or services;

g) financiers and insurers who provide financial and related support for the project;

h) regulators of project-related activities or the assets, products or services that can be created by the project; and

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i) other stakeholders, including sub-contractors, suppliers and parties who could have an interest in the project and its outcomes, and users or beneficiaries of the assets, products or services that can be created by the project.

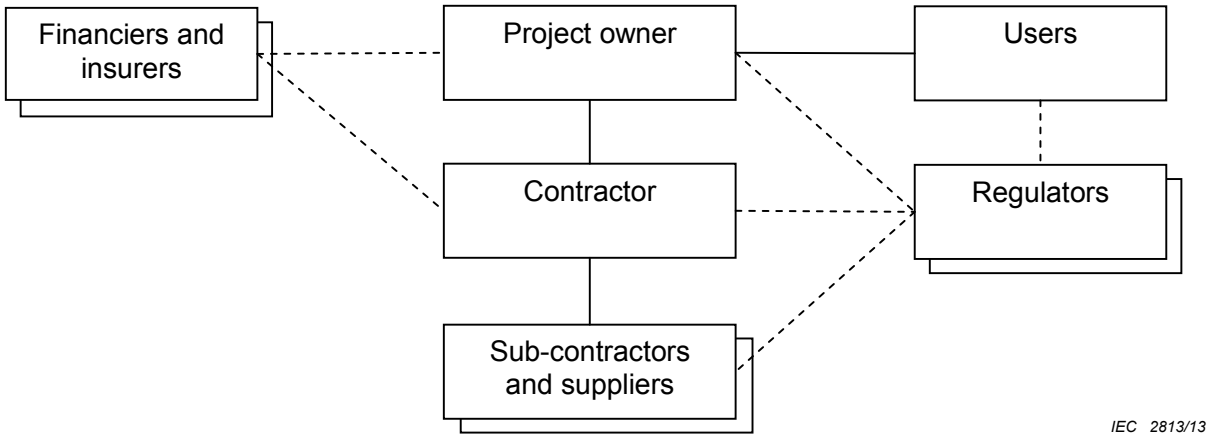

Figure 1 – Principal stakeholders in a project

5 Principles

For project risk management to be effective, an organization should at all levels comply with the principles as shown below.

a) Risk management creates and protects value

Risk management contributes to the demonstrable achievement of objectives and improvement of performance and quality in projects and the assets, products and services they create. The objectives shall be understood clearly by all parties.

b) Risk management is an integral part of all organizational processes associated with a project

Risk management is not a stand-alone activity that is separate from the main activities and processes of the project or the organization. Risk management is part of the responsibilities of project managers and of staff at all levels. It is an integral part of all the organizational processes associated with a project, including strategic project and investment planning, project management and management of project change.

c) Risk management is part of decision-making

Risk management helps decision makers make informed choices about the project, within each stage of its life, prioritize actions and distinguish among alternative courses of action. This implies that all decisions should consider risk.

d) Risk management explicitly addresses uncertainty

All managers should explicitly take account of uncertainty, the nature of that uncertainty, and how it can be addressed, particularly in critical processes.

e) Risk management is systematic, structured and timely

A systematic, timely and structured approach to risk management contributes to consistent, comparable and reliable project decisions, to the efficiency of project management processes and to the benefits of the project. A sound framework for risk management should be applied from the beginning of a project.

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f) Risk management is based on the best available information

The inputs to the process of managing risk in a project are based on information sources such as technical and engineering analyses, physical site and equipment inspections, test results and progress reports, supplemented with historical data, experience, stakeholder feedback, forecasts and expert judgement. However, those involved with managing risks in a project should inform themselves of, and should take into account, any limitations of the data or modelling used, uncertainty in the information available or the possibility of divergence among experts.

g) Risk management is tailored

Risk management activities are adapted to the kind of project, the project's external and internal context and those of the organizations involved, and the level of uncertainty and complexity associated with the project. The level of risk management effort is proportionate to the situation.

h) Risk management takes human and cultural factors into account

The capabilities, perceptions and intentions of people and organizations that can facilitate or hinder achievement of the project's objectives are taken into account when managing risk.

i) Risk management is transparent and inclusive

Appropriate and timely involvement of stakeholders and, in particular, decision makers at all levels of the organization, ensures that risk management remains relevant and up-to-date. Involvement also allows stakeholders to be properly represented and to have their views taken into account in determining risk criteria.

j) Risk management is dynamic, iterative and responsive to change

As a project progresses and as related external and internal events occur, context and knowledge change, monitoring and review take place, new risks emerge, some risks change, and other risks disappear. Therefore, risk management activities in a project help project decision-makers to continually identify, understand and respond to change.

k) Risk management facilitates continual improvement of the organization

Organizations should develop and implement strategies to improve the maturity of their project risk management alongside all other aspects of their organizational processes.

6 Project risk management framework

6.1 General

Project risk management processes should be integrated with project management processes. The project management framework – the way in which the project management process will be organized, structured and controlled – should provide the foundations and arrangements that will embed project risk management throughout the project through all phases, at all levels and across all the organizations involved. The success of project risk management will depend in part on the effectiveness of the integration.

The project risk management framework assists in managing project risks through the application of the consistent and effective project risk management process (see Clause 7) at varying levels and within the specific context of the project. The framework ensures that information about project risk derived from these processes is adequately reported and used as a basis for decision making and accountability at all relevant organizational and project levels.

This clause describes the necessary components of the framework for managing project risk and the way in which they interrelate in an iterative manner. Figure 2 shows the risk management framework specified in ISO 31000 applied to managing risk in projects.

This framework is not intended to prescribe a management system, but rather to assist the organizations involved in a project to integrate project risk management into the overall

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project management framework. Therefore, organizations should adapt the components of the framework to their specific needs and the specific project requirements.

If an organization's existing project management practices and processes include components of risk management, or if the organization has already adopted a formal project risk management process for particular types of projects, risks or situations, then these should be critically reviewed and assessed against this standard to determine their adequacy and effectiveness.

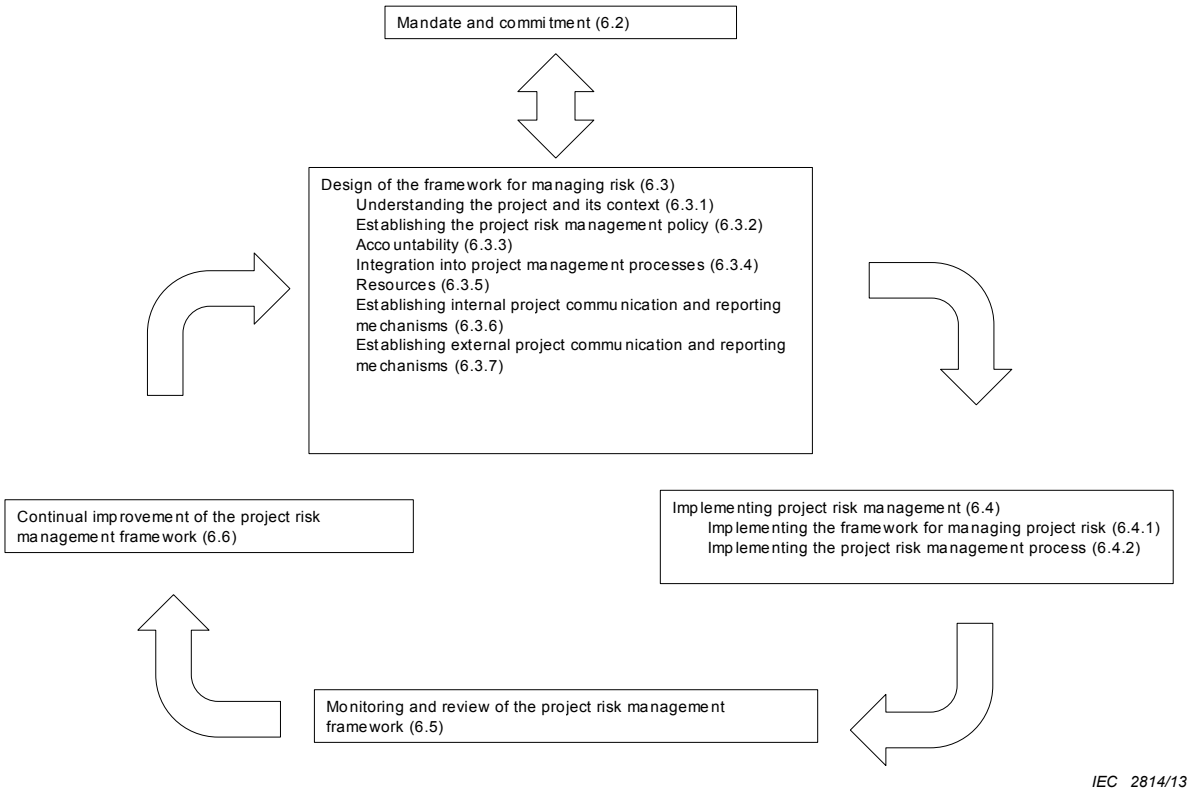

Figure 2 – Relationship between the components of the framework for managing risk, adapted from ISO 31000

6.2 Mandate and commitment

The introduction of risk management and ensuring its on-going effectiveness require strong and sustained commitment by management of all the organizations involved in the project, including owners and key contractors, as well as strategic and rigorous planning to achieve commitment at all levels. Management of owner, contractor and major sub-contractor or supplier organizations should

a) define and endorse a common risk management policy for the project,

b) ensure that the cultures of the participating organizations and the project risk management policy are aligned as far as possible,

c) align project risk management objectives with the objectives and strategies of the organizations involved, and particularly those of the owner organization,

d) determine project risk management performance indicators that align with performance indicators for the project itself and the organizations involved,

e) ensure legal and regulatory compliance,

f) assign accountabilities and responsibilities at appropriate levels within the organization structures and within the project organization,

g) ensure that the necessary resources are allocated to project risk management,

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