Risk Management Framework
Management Document

Document Number: COR-PHI-00008.0

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Rev	**Date**	**Revision Description**	**Prepared**	**Checked**	**Approved**

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1 INTRODUCTION

Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project. The objectives of Project Risk Management are to increase the probability and/or impact of positive risks (opportunities) and to decrease the probability and/or impact of negative risks (threats), to optimise the chances of project success.

Risk should also be monitored and managed as the project progresses to ensure that the project stays on track and emergent risks are addressed.

1.1 PURPOSE

The purpose of this Risk Management Framework is to document the process for identifying, assessing, and controlling potentially unsafe acts or conditions by describing how:

- Hazards are identified.
- Consequences of the realisation of the hazards are established.
- Frequencies of the realisation of the hazard are estimated.
- Associated risk is evaluated, and
- Associated risk is managed.

This procedure shall apply to all business processes associated with Pivotree Pty Ltd (**Pivotree**) as appropriate:

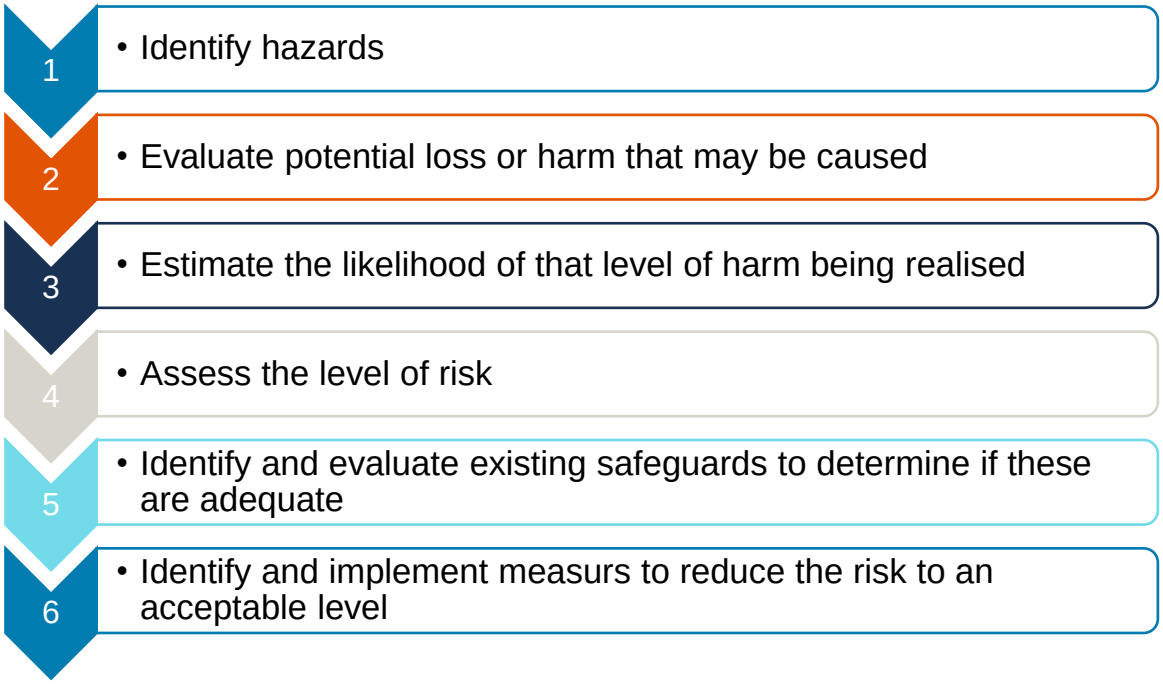

Figure 1 - Risk Assessment General Guideline

1.2 REFERENCES

1.2.1 CODES AND STANDARDS

Ref	Document	Doc. Number
[Ref 1]	Risk Management	ISO 31000:2018

1.2.2 PIVOTREE DOCUMENTS AND FORMS

Ref	Document	Doc. Number
[Ref 2]	Risk Matrix	COR-RSK-00010.0

2 PRINCIPLES

For risk management to be effective, an organisation should at all levels comply with the principles below.

1. Risk management creates and protects value: Risk management contributes to the demonstrable achievement of objectives and improvement of performance in, for example, human health and safety, security, legal and regulatory compliance, public acceptance, environmental protection, product quality, project management, efficiency in operations, governance, and reputation.
2. Risk management is an integral part of all organisational processes: Risk management is not a stand-alone activity that is separate from the main activities and processes of the organisation. Risk management is part of the responsibilities of management and an integral part of all organisational processes, including strategic planning and all project and change management processes.
3. Risk management is part of decision making: Risk management helps decision makers make informed choices, prioritise actions, and distinguish among alternative courses of action.
4. Risk management explicitly addresses uncertainty: Risk management explicitly takes account of uncertainty, the nature of that uncertainty, and how it can be addressed
5. Risk management is systematic, structured, and timely: A systematic, timely and structured approach to risk management contributes to efficiency and to consistent, comparable, and reliable results.
6. Risk management is based on the best available information: The inputs to the process of managing risk are based on information sources such as historical data, experience, stakeholder feedback, observation, forecasts, and expert judgement. However, decision makers should inform themselves of, and should consider, any limitations of the data or modelling used or the possibility of divergence among experts.
7. Risk management is tailored: Risk management is aligned with the organisation's external and internal context and risk profile.
8. Risk management takes human and cultural factors into account: Risk management recognises the capabilities, perceptions and intentions of external and internal people that can facilitate or hinder achievement of the organisation's objectives.
9. Risk management is transparent and inclusive: Appropriate and timely involvement of stakeholders and decision makers at all levels of the organisation, ensures that risk management remains relevant and up to date. Involvement also allows stakeholders to be properly represented and to have their views considered in determining risk criteria.
10. Risk management is dynamic, iterative, and responsive to change: Risk management continually senses and responds to change. As external and internal events occur, context and knowledge change, monitoring and review of risks take place, new risks emerge, some change, and others disappear.
11. Risk management facilitates continual improvement of the organisation: Organisations should develop and implement strategies to improve their risk management maturity alongside all other aspects of their organisation.

3 FRAMEWORK

3.1 PLAN RISK MANAGEMENT

The process of defining how to conduct risk management activities for a project.

- Risk Management Plan: Risk Strategy, Methodology, Roles & Responsibilities, Funding, Timing, Risk Categories (Risk Breakdown Structure), Stakeholder Risk Appetite, Likelihoods and Consequences, Probability and Impact Matrix (Double Sided for Positive and Negative Risks), Reporting, and Tracking.
- Risk Breakdown Structure: Level 1: Technical Risk, Management Risk, Commercial Risk, External Risk.
- Project Documents: Stakeholder register

3.2 IDENTIFY RISKS

The process of identifying individual project risks as well as sources of overall project risk and documenting their characteristics.

- Workshops, Checklists, Interviews, Meetings, SWOT, HIRA, HAZID
- Risk Register contains: ID, Risk Name, Detail, RBS, Cause, Mitigation, Ranking, Effect, Owner, Actions
- Project Documents: Assumption log, Cost estimates, Duration estimates, Issue log, Lessons learned register, Requirement's documentation, Resource requirements, Stakeholder register.
- Personal risk mitigation techniques: Take 5, Self-questioning, Observation, Group Discussion

3.3 PERFORM QUALITATIVE RISK ANALYSIS

The process of prioritising individual project risks for further analysis or action by assessing their probability of occurrence and impact as well as other characteristics.

- Performing Qualitative Risk Analysis establishes the relative priorities of individual project risks for Plan Risk Responses.
- Integrating risk perception survey of stakeholders prior to workshop can correct for the potential of bias from stakeholders in Qualitative Assessments.
- Risk Prioritisation by Parameter:
  - Urgency: Period within which a response to the risk is to be implemented to be effective. A short period indicates high urgency.
  - Proximity: Period before the risk might have an impact on one or more project objectives. A short period indicates high proximity.
  - Dormancy: Period that may elapse after a risk has occurred before its impact is discovered. A short period indicates low dormancy.
  - Manageability: Ease with which the risk owner (or owning organisation) can manage the occurrence or impact of a risk. Where management is easy, manageability is high.
  - Controllability: Degree to which the risk owner (or owning organisation) can control the risk's outcome. Where the outcome can be easily controlled, controllability is high.
  - Detectability: Ease with which the results of the risk occurring, or being about to occur, can be detected and recognized. Where the risk occurrence can be detected easily, detectability is high.
  - Connectivity: Extent to which the risk is related to other individual project risks. Where a risk is connected to many other risks, connectivity is high.
  - Strategic Impact: Risks with potential to have a positive or negative effect on the organisation 's strategic goals. Where the risk has a major effect on strategic goals, strategic impact is high.
  - Propinquity: The degree to which a risk is perceived to matter by one or more stakeholders. Where a risk is perceived as very significant, propinquity is high.
- Bubble Charts are good to show multiple categories on one diagram.
- Project Documents: Assumption log, Risk register, Stakeholder register

3.4 PERFORM QUANTITATIVE RISK ANALYSIS

The process of numerically analysing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives.

- Quantitative risk analysis usually requires specialised risk software and expertise in the development and interpretation of risk models.
- Risks may be covered by probability distributions.

- Tools: Simulation (Monte Carlo stochastic analysis), Sensitivity Analysis, Decision Tree Analysis, Influence Diagrams.
- Project Documents: Assumption log, Basis of estimates, Cost estimates, Cost forecasts, Duration estimates, Milestone list, Resource requirements, Risk register, Risk report, Schedule forecasts.

3.5 PLAN RISK RESPONSES

The process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks.

- Effective and appropriate risk responses can minimise individual threats, maximise individual opportunities, and reduce overall project risk exposure.
- Strategies for Threats: Escalate (Outside Scope of Project), Avoid (Eliminate and Protect), Transfer (Insurance), Mitigate (Reduce Probability of Failure), Accept (Do nothing)
- Strategies for Opportunities: Escalate (Outside Scope of Project), Exploit (Assure Capture), Share (divide the risk to mitigate consequence), Enhance (Increase Probability of Success), Accept (Do nothing)
- Strategies can be employed at individual risk, project risk or program risk level.
- Project Documents: Lessons learned register, Project schedule, Resource breakdown structure Resource calendars, Risk register, Risk report, Stakeholder register.

3.6 IMPLEMENT RISK RESPONSES

The process of implementing agreed-upon risk response plans.

- Proper attention to the Implement Risk Responses process will ensure that agreed-upon risk responses are executed. Assign risks to risk owners.
- Project Documents: Lessons learned register, Risk register, Risk report.

3.7 MONITOR RISKS

The process of monitoring the implementation of agreed-upon risk response plans, tracking identified risks, identifying and analysing new risks, and evaluating risk process effectiveness throughout the project.

- The Monitor Risks process uses performance information generated during project execution to determine if:
  - Implemented risk responses are effective,
  - Level of overall project risk has changed,
  - Status of identified individual project risks has changed,
  - New individual project risks have arisen,
  - Risk management approach is still appropriate,
  - Project assumptions are still valid,
  - Risk management policies and procedures are being followed,
  - Contingency reserves for cost or schedule require modification, and
  - Project strategy is still valid.
  - Tools: Technical Performance Analysis, Reserve Analysis (Budget & Schedule Contingency), Audits
- Project Documents: Issue log, Lessons learned register, Risk register, Risk report.

4 PROCESS

The risk management process should be:

1. an integral part of management,
2. embedded in the culture and practices, and
3. tailored to the business processes of the organisation.

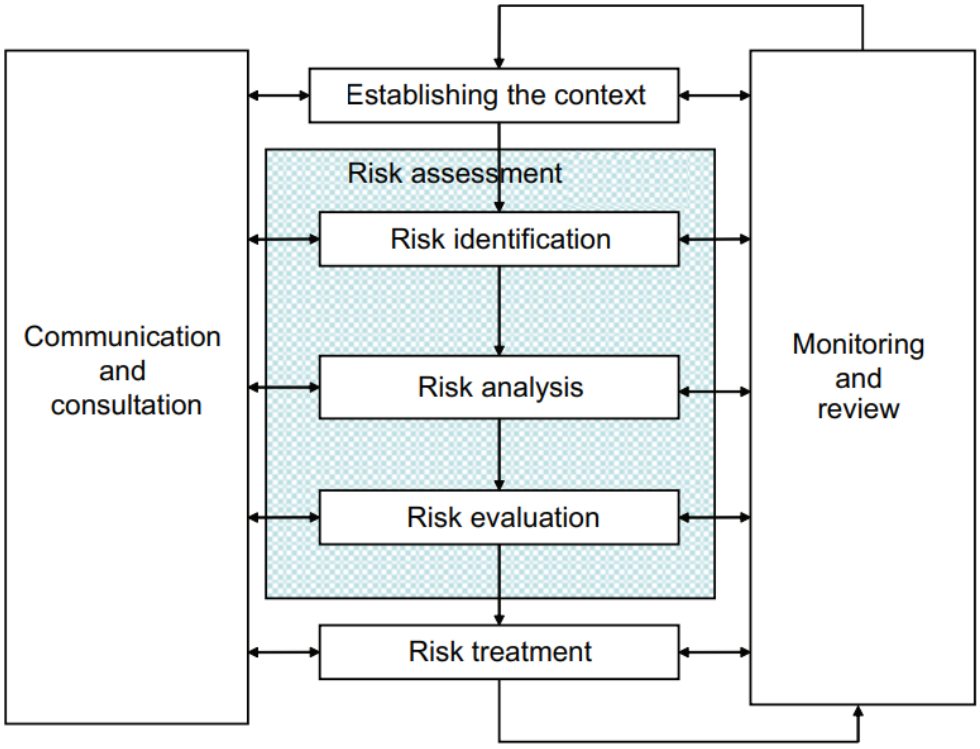

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Figure 2 - Risk Management Process

4.1 COMMUNICATION AND CONSULTATION

Communication and consultation with external and internal stakeholders should take place during all stages of the risk management process.

Therefore, plans for communication and consultation should be developed at an early stage. These should address issues relating to the risk itself, its causes, its consequences (if known), and the measures being taken to treat it. Effective external and internal communication and consultation should take place to ensure that those accountable for implementing the risk management process and stakeholders understand the basis on which decisions are made, and the reasons why particular actions are required.

A consultative team approach may:

- help establish the context appropriately,
- ensure that the interests of stakeholders are understood and considered,
- help ensure that risks are adequately identified,
- bring different areas of expertise together for analysing risks,
- ensure that different views are appropriately considered when defining risk criteria and in evaluating risks,
- secure endorsement and support for a treatment plan,
- enhance appropriate change management during the risk management process, and
- develop an appropriate external and internal communication and consultation plan.

Communication and consultation with stakeholders are important as they make judgements about risk based on their perceptions of risk. These perceptions can vary due to differences in values, needs, assumptions, concepts, and concerns of stakeholders. As their views can have a significant impact on the decisions made, the stakeholders' perceptions should be identified, recorded, and considered in the decision-making process.

Communication and consultation should facilitate truthful, relevant, accurate and understandable exchanges of information, considering confidential and personal integrity aspects.

4.2 RISK ASSESSMENT

Risk assessment is the overall process of risk identification, risk analysis and risk evaluation.

4.2.1 RISK IDENTIFICATION

The organisation should identify sources of risk, areas of impacts, events (including changes in circumstances) and their causes and their potential consequences. The aim of this step is to generate a comprehensive list of risks based on those events that might create, enhance, prevent, degrade, accelerate, or delay the achievement of objectives. It is important to identify the risks associated with not pursuing an opportunity. Comprehensive identification is critical, because a risk that is not identified at this stage will not be included in further analysis.

Identification should include risks whether their source is under the control of the organisation, even though the risk source or cause may not be evident. Risk identification should include examination of the knock-on effects of consequences, including cascade and cumulative effects. It should also consider a wide range of consequences even if the risk source or cause may not be evident. As well as identifying what might happen, it is necessary to consider possible causes and scenarios that show what consequences can occur. All significant causes and consequences should be considered.

The organisation should apply risk identification tools and techniques that are suited to its objectives and capabilities, and to the risks faced. Relevant and up-to-date information is important in identifying risks. This should include appropriate background information where possible. People with appropriate knowledge should be involved in identifying risks.

4.2.2 RISK ANALYSIS

Risk analysis involves developing an understanding of the risk. Risk analysis provides an input to risk evaluation and to decisions on whether risks need to be treated, and on the most appropriate risk treatment strategies and methods. Risk analysis can also provide an input into making decisions where choices must be made, and the options involve different types and levels of risk.

Risk analysis involves consideration of the causes and sources of risk, their positive and negative consequences, and the likelihood that those consequences can occur. Factors that affect consequences and likelihood should be identified. Risk is analysed by determining consequences and their likelihood, and other attributes of the risk. An event can have multiple consequences and can affect multiple objectives. Existing controls and their effectiveness and efficiency should also be considered.

The way in which consequences and likelihood are expressed and the way in which they are combined to determine a level of risk should reflect the type of risk, the information available and the purpose for which the risk assessment output is to be used. These should all be consistent with the risk criteria. It is also important to consider the interdependence of different risks and their sources.

The confidence in determination of the level of risk and its sensitivity to preconditions and assumptions should be considered in the analysis, and communicated effectively to decision makers and, as appropriate, other stakeholders. Factors such as divergence of opinion among experts, uncertainty, availability, quality, quantity and ongoing relevance of information, or limitations on modelling should be stated and can be highlighted.

Risk analysis can be undertaken with varying degrees of detail, depending on the risk, the purpose of the analysis, and the information, data, and resources available. Analysis can be qualitative, semi-quantitative or quantitative, or a combination of these, depending on the circumstances.

Consequences and their likelihood can be determined by modelling the outcomes of an event or set of events, or by extrapolation from experimental studies or from available data. Consequences can be expressed in terms of tangible and intangible impacts. In some cases, more than one numerical value or descriptor is required to specify consequences and their likelihood for different times, places, groups, or situations.

4.2.3 RISK EVALUATION

The purpose of risk evaluation is to assist in making decisions, based on the outcomes of risk analysis, about which risks need treatment and the priority for treatment implementation.

Risk evaluation involves comparing the level of risk found during the analysis process with risk criteria established when the context was considered. Based on this comparison, the need for treatment can be considered.

Decisions should take account of the wider context of the risk and include consideration of the tolerance of the risks borne by parties other than the organisation that benefits from the risk. Decisions should be made in accordance with legal, regulatory, and other requirements.

In some circumstances, the risk evaluation can lead to a decision to undertake further analysis. The risk evaluation can also lead to a decision not to treat the risk in any way other than maintaining existing controls.

This decision will be influenced by the organisation 's risk attitude and the risk criteria that have been established.

4.3 RISK TREATMENT

Risk treatment involves selecting one or more options for modifying risks and implementing those options.

Once implemented, treatments provide or modify the controls.

4.3.1 SELECTION OF RISK TREATMENT OPTIONS

Risk treatment involves a cyclical process of:

- assessing a risk treatment.
- deciding whether residual risk levels are tolerable.
- if not tolerable, generating a new risk treatment; and
- assessing the effectiveness of that treatment

Risk treatment options are not necessarily mutually exclusive or appropriate in all circumstances. The options can include the following:

- avoiding the risk by deciding not to start or continue with the activity that gives rise to the risk.
- taking or increasing the risk 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.

4.4 MONITORING AND REVIEW

Both monitoring and review should be a planned part of the risk management process and involve regular checking or surveillance. It can be periodic or ad-hoc.

Responsibilities for monitoring and review should be clearly defined.

The organisation 's monitoring and review processes should encompass all aspects of the risk management process for the purposes of:

- ensuring that controls are effective and efficient in both design and operation.
- obtaining further information to improve risk assessment.
- analysing and learning lessons from events (including near misses), changes, trends, successes, and failures.
- detecting changes in the external and internal context, including changes to risk criteria and the risk itself which can require revision of risk treatments and priorities; and
- identifying emerging risks.

Progress in implementing risk treatment plans provides a performance measure. The results can be incorporated into the organisation 's overall performance management, measurement, and external and internal reporting activities.

The results of monitoring and review should be recorded and externally and internally reported as appropriate and should also be used as an input to the review of the risk management framework.

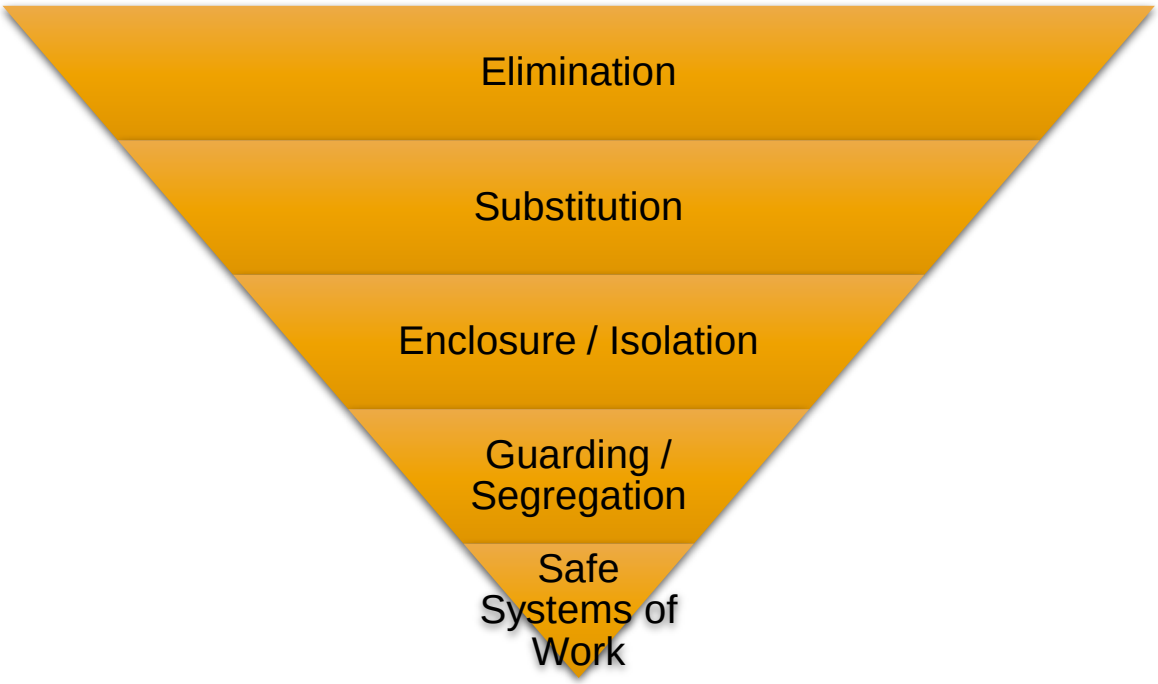

Figure 3 - Risk Management Controls

4.5 RECORDING THE RISK MANAGEMENT PROCESS

Risk management activities should be traceable. In the risk management process, records provide the foundation for improvement in methods and tools, as well as in the overall process. Decisions concerning the creation of records should consider:

- the organisation's needs for continuous learning,
- benefits of re-using information for management purposes,
- costs and efforts involved in creating and maintaining records,
- legal, regulatory, and operational needs for records,
- method of access, ease of retrievability and storage media,
- retention period, and
- sensitivity of information.

4.6 KEY OUTPUTS

Key outputs from the Risk Management process are:

5. An understanding of the risk associated with the activity in question.
6. Effective measures for controlling these risks.
7. Performance standards for the control measures, and
8. Improvement actions where appropriate (to be included in the project action tracking register).