Project Risk Management – Quick Reference Guide

'Risk management is a process that allows individual risk events and overall risk to be understood and managed proactively, optimising success by minimising threats and maximising opportunities'. - *APM Body of Knowledge*[1]

This document aims to provide a quick reference guide to assist those undertaking risk management activities on a project, highlighting some key aspects and areas of best practice to incorporate. It is not intended to be a comprehensive description of the risk management process and nor does it replace the Project Management Framework[2] or Corporate Risk Management Strategy[3].

1 Risk Management Process

Project risk must be assessed, reviewed and actively managed throughout the project life cycle. All projects should be assessed for technical, safety, financial and other risks, with preventative actions and contingency plans developed for the more significant risks.

The Project Management Plan or (a separate Risk Strategy) should document *how* risk is going to be managed on the project. This should include:

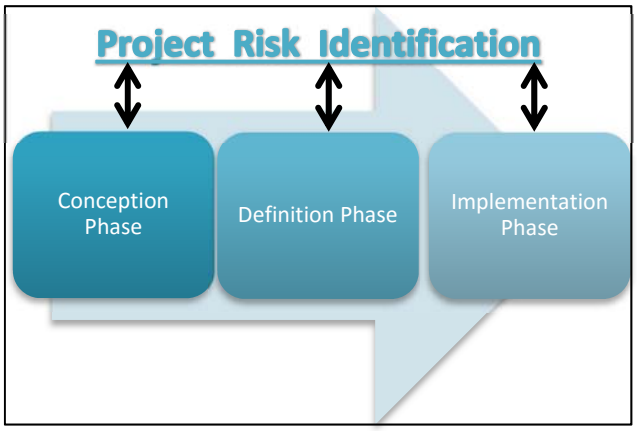
- How risks will be assessed (eg. scoring methodology - see section 3);
- How differently scored risks will be treated and prioritised;
- How often the risk management plan (also called a risk register) including control measures, will be reviewed, and by whom;
- When and how risks will be escalated.

[1] 6th Edition
[2] https://staff.stfc.ac.uk/prog/project/Pages/default.aspx
[3] https://staff.stfc.ac.uk/about/gov/Documents/SOP1RiskMgtF-workandStrategy%28June16%29.pdf

2 Identify and record risks

A risk is "an uncertain event or set of circumstances that, should it occur, will have an effect[4] on achievement of one or more objectives" - APM Body of Knowledge

2.1 Risk Identification



Risks can be identified at any time during the project life cycle as risk management is a continuous and ongoing process.

During the **conception phase**, it is important to consider the events that could prevent the project from achieving its overarching objectives; this could help decision makers determine if the project is feasible.

In the **definition phase,** once project objectives are defined in the project management plan, risks to achieving these objectives must be carefully identified. A risk identification session could be a workshop with the project team facilitated by an impartial person or the project manager.

Risks should continue to be identified throughout the **implementation phase** either through regular project reviews or in specific risk meetings (recommended for more complex projects). Everyone involved in the project should be encouraged to highlight risks and suggest solutions.

Identified risks should be logged in a risk management plan (risk register). Once risks have been added to the document it should remain a live document throughout the project lifecycle being reviewed regularly and updated as things inevitably change.

2.2 Describing risks

Clear risk descriptions are vital to:

- fully understand the risk, resulting in a better assessment of the potential impact and the possible solutions;
- communicate effectively with stakeholders, minimising the chance of misinterpretation.

To clearly describe a risk there are three aspects that need to be included in the statement: the cause, risk and effect:

[4] Note that this definition of a risk does not refer only to negative effects. A risk can be either a threat (negative effect on objectives if occurs) or an opportunity (positive effect on objectives if occurs). The rest of this guidance note concentrates on management of threats however best practice project risk management should include the same process for opportunities, discussed further in section 6.

3 Analysing and prioritising risks

The methodology for scoring risks should be defined and agreed with the Project Sponsor/Board. This avoids differing interpretations and helps prioritise risks, therefore optimising effort to focus on mitigating the most severe threats. A useful tool for this is to agree scoring criteria, noting that:

- The level of detail should be proportionate to the complexity and value of the project
- The exact criteria should be tailored to the project's specific circumstances, taking into account things like risk appetite (how much risk the organisation is prepared to accept on the project) and the specific constraints (eg. on this project is meeting the schedule more important than coming in on budget or vice versa?)
- It may also be useful to incorporate risk proximity into your scoring and prioritisation ie. how soon is the risk likely to be realised if it is not mitigated.
- Assessment of project risk will also feed into the corporate risk management process using the categorisation criteria set out in the corporate risk management strategy.

3.1 Example: probability scoring criteria

Qualitative Description	**Definition**
	Estimated likelihood of the risk occurring:
Very unlikely	< 20%.
Unlikely	>= 20% but <40%
Moderate	> =40% but <60%
Likely	> =60% but <80%
Very likely	>= 80%

3.2 Example: impact scoring criteria

Qualitative Description	**Definition**			
	Estimated impact if the risk does occur to:			
	Cost	Schedule	Quality	Reputation
Very low	0-1% over budget	Cannot deliver activity to plan, no impact on overall task.	Minimal or no consequence to quality of output.	Short term / local damage to project reputation.
Low	1-5% over budget	Cannot deliver task to plan, no impact on interim milestones.	Minor reduction in quality, can be tolerated with little or no impact on stakeholder/customer acceptance.	Medium term / damage to departmental reputation.
Moderate	5-10% over budget	Cannot meet an interim milestone, no impact on key/customer milestones	Quality of significant elements of output reduced; complicates stakeholder/customer acceptance.	Long term/ damage to departmental reputation.
High	10-15% over budget	No float remaining for one or more key/customer milestone.	Quality of final output reduced; does not meet stakeholder/ customer expectations.	Long term / national damage to STFC reputation.
Very high	>15% over budget	Cannot meet a key/customer milestone	Quality of final output severely reduced; significantly falls short or stakeholder/customer expectations.	Long term / international damage to STFC reputation.

When defining the scoring grid keep in mind the calculation that the STFC risk register template performs to generate the RAG status in order to develop criteria that give a sensible spread:

			Impact				
			Very low	Low	Moderate	High	Very high
		Score	1	2	3	4	5
Probability	Very likely	5	5	10	15	20	25
	Likely	4	4	8	12	16	20
	Moderate	3	3	6	9	12	15
	Unlikely	2	2	4	6	8	10
	Very unlikely	1	1	2	3	4	5

3.3 Quantification of risk

STFC's Project Management Framework includes the need to calculate an agreed amount of contingency and/or working margin as a direct result of risk analysis[5]. To do this the cost impact of risks must be quantified to at least the same level of detail required to score risks in a consistent and defined way as described in 3.2. For some projects this level of quantification is sufficient however in other cases, particularly on larger or more complex projects, putting more effort into detailed risk quantification can enable the application of more sophisticated risk analysis techniques such as Monte Carlo analysis[6] which can be used to calculate the likelihood of meeting the project budget or completion date.

4 Plan response

Once risks have been assessed, proportionate mitigation actions and control measures should be planned. The aim of the planned action should be to respond in the most appropriate way to achieve one of the following responses:

Threat responses	
Avoid	This response aims to eliminate the possibility of the risk occurring. The controls or mitigating actions undertaken should aim to reduce the likelihood of the risk occurring to zero. This will not be possible for many risks but some specific risk events can be eliminated with this strategy.
Reduce	A common response to threats, this strategy identifies specific steps or actions that will reduce the overall score for the risk by: • Reducing the likelihood of the risk occurring, or • Reducing the impact of the risk if it does occur, or • A combination of the two.
Transfer	This strategy is used when the risk can be transferred to another activity or entity. A common example is purchasing insurance against a risk event.
Tolerate	Tolerate/accept the risk, no mitigation actions put in place. May be appropriate for low risks or where it is more cost or schedule effective to continue without specific mitigation effort. Allows a conscious, documented decision to be made to take no action to mitigate the risk, whilst still recording it on the risk register for regular review in case of change.

[5] The STFC Project Management Framework v3, page 26: https://staff.stfc.ac.uk/prog/project/Pages/default.aspx

[6] Monte Carlo analysis can be used to determine the most likely impact of all the identified risks by running numerous simulations using different risk realisation scenarios. This identifies the range of possible outcomes, with confidence levels calculated for each outcome.

- It may be appropriate for low (green) risks to be accepted and no action planned in order to focus effort on mitigating the most significant threats;
- Planned actions should have a specific owner (who may be different to the risk owner) and a timeframe for completion;

5 Implement & Monitor

Once the planned control measures and mitigation actions are implemented, their effectiveness, should be regularly reviewed (at an interval specified in the Project Management Plan) to ensure that they are having the intended effect and allow re-planning if additional action is needed.

The full risk register should also be regularly reviewed with new risks identified and updates made to any risks which have changed. The frequency of this review and who undertake it should be documented in the Project Management Plan as described in section 1.

Active risks and their management should be a key element of project reporting both to help the Project Manager best understand and manage risks to the project and to effectively communicate these risks to the Project Sponsor and other stakeholders (eg. Project Review Committee, Audit committee, Executive Board), including escalating risks to the Project Sponsor where appropriate (see Section 6).

6 Roles & Responsibilities

Each risk should have the following roles assigned:

Specific Risk Management Roles	
Risk Owner	The risk owner is the individual who is ultimately accountable for the effective management of that risk – see assigning ownership section 6.1. The risk owner could be the Project Manager, Project Sponsor or another senior project stakeholder as appropriate.
Risk Manager	The risk manager is responsible for day to day management of the risk and is the first point of reference to review and update risks. The risk manager may be the same individual as the risk owner or a separate person.
Action Owner	This is the person given responsibility of delivering one or more actions associated with the risk.

Risk Management is not the responsibility of one individual but of the collective project team. It is crucial that senior stakeholders are involved in risk management both in terms of being kept informed and taking ownership of risks that are outside of the control of the Project Manager.

Project Team roles in risk management	
Project Board Member (if applicable)	All members of the board should be risk aware; they should encourage an open and honest risk approach from the project team. The board members should be aware of the risk process and the risk scoring grid.
Project Sponsor	The Project Sponsor should be involved in the risk management process. They would usually be the risk owner for risks to the business case, as they are accountable for benefits realisation, and for risks that the Project Manager escalates to them where they are outside of the Project Manager's control.

Project Manager	The Project Manager is accountable for risk management within the project and is responsible for ensuring everyone involved in the project is aware of the risk process up to the appropriate level. The Project Manager should usually be the risk owner for risks to project objectives unless they are escalated, and are likely to be the risk manager for many risks but may delegate risk management of specific risks to members of the project team.
Project Team Member	All members of the project team should be risk aware, this includes understanding the top risks and the importance of the risk management process. The role they will take on most often is as action owner but they may also be delegated as risk manager by the Project Manager.

6.1 Assigning ownership

In order to identify and understand risks the project must have a clear set of objectives agreed with the Sponsor as it is risks to these objectives that the Project Manager is responsible for managing and controlling. Risks to achievement of the intended benefits set out in the business case will also be identified and these risks should be owned by the Project Sponsor as it is the Sponsor's responsibility to ensure that the objectives and constraints remitted to the Project Manager will deliver the intended benefits. Such risks can either be recorded in a separate Sponsor owned risk register, or on the Project Manager's risk register with the Project Sponsor marked as the Risk Owner. The Project Manager can also escalate risks to the Project Sponsor where they are outside the Project Manager's control or sufficiently severe.

7 Opportunities

Opportunities, that is uncertain events that would have a positive effect on project objectives should they occur, should be managed using a similar process to threats.

- Opportunities should be identified, assessed, prioritised and actions planned and implemented.
- Actions should aim to either exploit, enhance, facilitate or reject the opportunity.

Opportunity responses	
Exploit	This strategy aims to ensure that the opportunity is realized by increasing the likelihood of the risk occurring to 100%.
Enhance	This response aims to either increase the likelihood of the risk occurring or increasing the impact if the risk does occur, or a combination of both.
Share	This response involves allocating ownership to a third party who is best able to capture the opportunity for the benefit of the project.
Reject	This strategy documents that the opportunity was considered, but not implemented. Reasons for not implementing an opportunity may be excessive implementation cost and/or schedule increase, compared to the return from this element.