



Guide to Managing Project Risks for ODOT Statewide Transportation Improvement Program

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Preface

Risk management is one of the primary knowledge areas of project management to be applied throughout the life of a project. The Oregon Department of Transportation's Project Risk Management Program supports regional project teams as they manage risks during project delivery. Each region is responsible for project management, and thus project risk management.

This guide provides information about the fundamental aspects of project risk management. The ODOT Project Risk Register serves as the companion tool to this manual. We have designed this tool to intuitively and effectively facilitate the project risk management process for region project delivery. This tool is available for use by everyone; however, each region may use whichever tools and processes best fit its users and their projects.

This document was created and is maintained by ODOT's Project Risk Management Program. It is a living document that will be revised to reflect industry changes in the discipline of project risk management as well as evolve to best suit ODOT's needs.

Your input and feedback are welcome and appreciated. For feedback, questions or assistance please call 503-986-7168 or visit [ODOT's website](#) for more information.

ODOT's Project Risk Management Program would like to acknowledge and express gratitude to the Washington Department of Transportation (WSDOT) for their generosity and willingness to share their knowledge, project risk analysis tool and risk management documents. Many elements of this guide and ODOT's Project Risk Management Program have been modeled after WSDOT's.

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1 Introduction

1.1 Purpose

Oregon Department of Transportation Highway Directive DES 01-02, Managing Project Risks for ODOT STIP, requires that all applicable Statewide Transportation Improvement Program projects have a plan for managing scope, schedule, and budget risks of the project. Additionally, applicable STIP projects that exceed \$25 million in **estimated** total project cost are required to conduct a quantitative risk analysis that produces a risk based schedule and cost estimate.

This guide provides fundamentals for, and a consistent method to, manage project risks.

1.2 What is Project Risk?

The international standard ISO 31000 definition of risk is “the effect of uncertainty on objectives.” The Project Management Institute’s A Guide to the Project Management Body of Knowledge (PMBOK® Guide) Sixth Edition defines individual [project] risk as “an uncertain event or condition event that, if it occurs, has a positive or negative effect on one or more project objectives.”

Risks are commonly thought of as negative or harmful. While they certainly can be, risks can also be positive or beneficial to a project. RSMMeans’ Risk Management for Design and Construction states, “Something that is properly defined as risky does not necessarily mean that it is a bad thing, only that it is an uncertain thing.”

Transportation infrastructure project management is a complex environment of inherent uncertainty. Risk management recognizes that in a complex environment, achievement of organizational goals depends on managing many internal and external risks. If risks and uncertainty are inevitable, failing to consider them is irresponsible.

A proactive approach to project risk management effectively identifies, addresses and mitigates threat risk events before they develop into negative outcomes. It also identifies, addresses and enhances opportunity risk events into positive outcomes.

1.3 Why Project Risk Management?

Managing project risk includes a process of planning the risk management process, identifying project risk, performing risk analysis, evaluating and prioritizing risk, determining risk response strategy, implementing risk response, and monitoring and reviewing risk. Transparent and effective management of risks is an integral component of project management, shifting the odds of discovery and uncertainty in favor of desired outcomes.

Managing project risks, and documenting the process, provides the following benefits to a project:

- Can significantly reduce avoidable change, as defined by the project change management request process.
- Provides justification to support an elective (opportunity risk) or unanticipated (threat or opportunity risk) change, as defined by the Project Change Management Request Process, during project development in requesting a STIP amendment or procurement amendment.
- Can significantly reduce the probability of contract change orders or contractor claims, due to avoidable change, during the construction phase of the project.
- Provides justification to support an increase in construction authorization due to unanticipated change during the construction phase of the project.
- Demonstrates a well-managed project and builds credibility.
- Improves risk appetite and allows for strategic risk taking behavior.
- Recognizes uncertainty and provides objective forecasts of possible outcomes.
- Produces better business outcomes through more informed decision-making.
- Has a positive influence on creative thinking and innovation.
- Creates opportunities for improved project monitoring and control.
- Contributes to project success.
- Allows ODOT to identify and manage project-related enterprise risks (risks which occur regularly on projects)

Implementing a formal process provides a consistent framework to enable the ability to capture lessons learned and share information, as well as developing a repository of information that will remain beyond the project's lifecycle.

1.4 Guiding Principles for Project Risk Management

The transportation project manager (TPM) or the resident engineer-consultant projects (RE-CP) is responsible for generating the plan for managing risk, the project risk register and reviewing it with the team and stakeholders.

Project team members are responsible for documenting and communicating new risks as they are identified. This includes:

- Work and communicate progress on the most severe project risks first.
- Set realistic due dates and work to meet the dates.
- Execute project risk response actions at the appropriate level (i.e., project, team, sub-team).
- Keep stakeholders informed on current project risk status, as appropriate.

Guide to Managing Project Risks for ODOT STIP

- Document the planned project risk response history and actual outcomes. This documentation serves as a key input to root cause analysis, key learning, metrics and risk analysis.

2 Project Risk Management Organization

2.1 Process Responsibility

The TPM or RE-CP is responsible for the plan for managing risks and its effective implementation throughout the project development phase. The TPM or RE-CP is also responsible for creating and maintaining the project risk register, unless this task is delegated to a team member. The area manager, at their discretion, has the authority to appoint this responsibility to any member of the project team.

If the construction administration is to be performed by a consultant, then the RE-CP is responsible for project risk management activities during the construction phase.

2.1.1 Project Team

The TPM or RE-CP has overall responsibility to facilitate the process. Specific responsibilities for the TPM or RE-CP and project team members may include the following activities:

- Develop and implement the Risk Response Plan.
- Maintain the plan throughout the project development process.
- Clarify, consolidate and document project risks.
- Maintain and monitor data in the project risk register.
- Monitor the status of risk responses.
- Communicate status to risk owners.
- Escalate communication if expected response action deadlines are not met.

Project team members are, at minimum, specifically responsible for:

- Participating in risk assessment workshops and meetings.
- Performing the duties of risk owner, as assigned.
- Acting proactively in their risk management efforts.
- Reporting newly identified risks to the person in charge of managing project risks.

2.1.2 Risk Owner

The risk owner is the individual that the project team assigns responsibility for executing the risk response action. This assignment is based on the type of risk and should be assigned to the team member who is empowered to assure this risk is responded to. This will typically be a discipline lead.

The risk owner has the following responsibilities:

- Assess the risk and create a risk response plan that meets project team approval.
- Perform risk response actions, per the risk response plan.
- Present risk status at meetings, as required.

2.1.3 Construction Resident Engineer

During the project construction phase, the construction resident engineer (RE) is responsible for the plan for managing risks and its effective implementation. The construction phase of the project triggers many risk events. Therefore, the RE should be involved in the design phase of the project and be an active participant in project meetings.

Specific responsibilities of the RE include:

- Managing project risks during the construction phase.
- Manage projects in order to reduce risks and control project budget and schedule.
- Pursue response actions as identified in the risk management plan.
- Participate in risk assessment workshops and risk management meetings for projects in the design phase.
- Perform the duties of risk owner, if assigned.
- Be proactive in their risk management efforts for projects.

2.1.4 Area Manager

The area manager has overall responsibility to ensure project teams comply with Highway Directive DES 01-02.

Specific responsibilities include the following activities.

- Ultimately responsible for assigning risk owners.
- Approve the risk response action of very high severity level risks.
- Support risk response action implementation.
- Assist in cross-organization and controversial risk response action, including determining the involvement of senior management and other organizational resources.
- Appointing a person in charge of managing risks for the project.

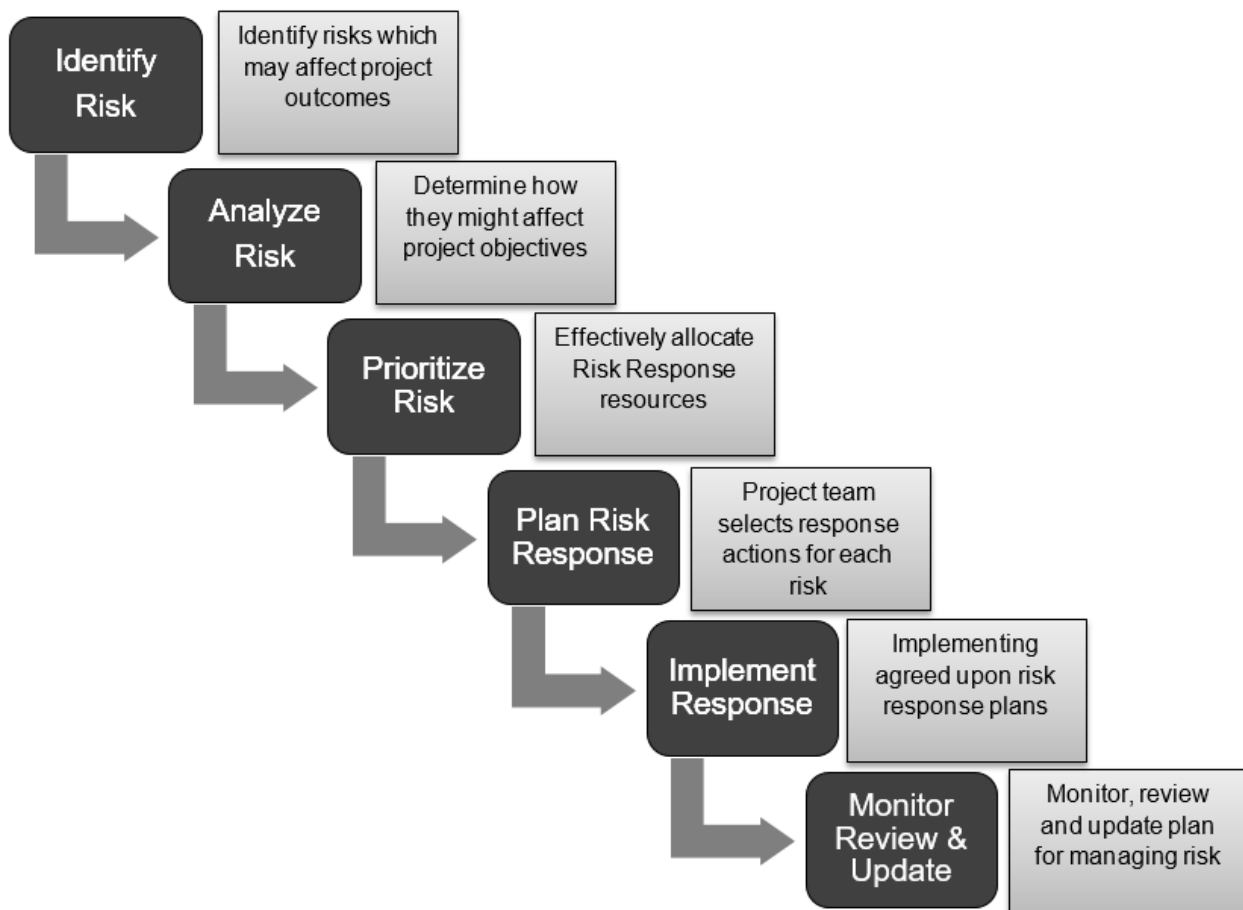
3 Project Risk Management Process

Project risk management involves seven major phases:

1. Risk management planning.
2. Identify risk.
3. Perform risk analysis.
4. Evaluate and prioritize risk.
5. Plan risk response.
6. Implement risk response.
7. Risk monitoring and control.

Once the risk management planning is complete, each risk should undergo the following process:

Figure 1: Risk Management Process Chart



3.1 Plan Risk Management

The systematic process of deciding how to approach, plan and execute around the management of scope, schedule, and budget risk-related activities throughout the life of a project. It is intended to maximize the beneficial outcome of the opportunities and minimize or eliminate the consequences of threat risks.

Pursuant to DES 01-02, all applicable STIP projects are required to have a plan for managing scope, schedule and budget risks.

Specific objectives of the plan include:

- Ensuring critical risks impacting scope, schedule, budget, project performance and change management are proactively identified, communicated, responded to and escalated in a timely manner.
- Focusing attention to key risks impacting the project and individual teams.
- Producing documentation that allows project management to focus efforts on the “right” (i.e., high likelihood and high impact) risks with an effective coordination of effort.
- Ensuring appropriate stakeholders are informed and, if applicable, participate in the mitigation.
- Documenting discussions and response action of project risks throughout the project life cycle.

The plan consists of the process and timing for identifying and managing risks, response actions required and organizational responsibility for monitoring and managing the risks throughout the entire lifecycle.

3.2 Identify Risks

Identify risks that may affect project objectives and documenting them in the project risk register, which includes the following:

- Date the risk. When was the risk initially identified?
- Identify the nature of the risk. Is the risk a threat or an opportunity?
- Describe each potential risk event specifically. Each description should clearly discuss how the risk could affect the project’s scope, schedule, and/or budget. Include a description of possible risk triggers (what causes the risk to occur).
- Categorize the risk. Is this a right of way risk or a stakeholder risk?
- Assign a risk status. Is the risk active, dormant, or retired?

A risk identified as a threat means that if it occurs, it will likely result in a cost increase and schedule delay. Conversely, a risk identified as an opportunity means that if it occurs, it will likely result in a cost savings and schedule gain.

For risk status, a dormant risk is of such low priority that it does not warrant resources for risk response. A retired risk has been either completely avoided (threats) or exploited

(opportunities). If the risk response strategy for a risk is to accept it (take the risk), it should remain as an active risk until the risk trigger event has been surpassed by the project.

It is helpful to use a consistent format when describing risks so they are clear, unambiguous and easy to understand. The Project Risk Management Program recommends writing risk statements using an “if-then” format. For example:

“If differing site conditions occur on the project, **then** our cost can increase causing the project to go over budget.”

When describing risk and writing risk statements, it is important to be as specific as possible. The above example risk statement would apply to almost every project ODOT delivers, so how useful is it? The detailed description of the risk must provide information that is specific, measurable, attributable and relevant. Do not hesitate to rely on engineering judgement from the design team, who are the projects risk experts. The following is an example of risk description including these characteristics:

“Historical subsurface information in the vicinity of the drilled shafts of bent 6 indicate a boulder field may be present. **If** the drilled shaft contractor encounters boulders in soil that otherwise appears granular, **then** the contractor may file a differing site conditions claim that may result in cost increases of \$250k to \$500k and a schedule delay of 2 to 6 months.”

Project risks should be identified in a workshop setting, facilitated by the TPM or RE-CP. At a minimum, members of the project team participate in risk identification. Ideally, all internal and external parties that may have relevant input would be included in this step of the process to identify project risks.

Risk identification is ongoing throughout project development. As projects evolve, the risk profile changes and project understanding grows. Previously identified risks may change and new risks may emerge.

Here are a few tips for risk identification:

- Focus on identifying large significant risks that affect project objectives.
- Carefully document and describe risks. Be as specific as possible.
- Be mindful of possible biases during the risk identification process.

3.3 Perform Risk Analysis

After risks are identified, subject matter experts (primarily the project team) analyze each risk to determine how it could affect the project. Risks can impact a project in several basic ways:

- The objectives are reduced or delayed.
- The schedule is extended or accelerated.
- The costs are increased or decreased.
- The quality is reduced or enhanced.

The primary intent of analyzing risks is to prioritize them so that resources are properly allocated for risk response.

3.3.1 Qualitative Risk Analysis

A qualitative risk analysis evaluates the probability of the risk occurring and, if the risk were to occur, evaluates its cost and schedule impact in terms of words (i.e. very low probability, medium cost impact, high schedule impact).

The following is an example of qualitative risk analysis:

Risk description: The design team anticipates approximately 1000 CY of contaminated soil. **If** the contractor encounters more contaminated soil than anticipated, **then** the project costs will increase and the schedule may be delayed.

Risk analysis: Low probability of occurrence, high cost impact, moderate schedule impact.

The Project Risk Management Program has developed a risk register tool that includes a scalable project risk rating table to facilitate the qualitative analysis of risk. This tool uses a range of cost and schedule impacts assigned to a number to categorize the qualitative impact. Below is an example of the risk rating table in this tool.

Table 1: Project Risk Register Tool – Risk Rating Table

Value	Prob. of Occurrence	Schedule Impact	Cost Impact	Qualitative Impact
1	<10%	0 – 9 days	0 – \$50k	Negligible
2	10-20%	9 days – 18 days	\$50k – \$100k	Very Low
3	20-30%	18 days – 45 days	\$100k – \$250k	Low
4	30-40%	45 days – 2.1 mths	\$250k – \$350k	Moderately Low
5	40-50%	2.1 mths – 3 mths	\$350k – \$500k	Moderate
6	50-60%	3 mths – 3.9 mths	\$500k – \$650k	Moderately High
7	60-70%	3.9 mths – 4.5 mths	\$650k – \$750k	High
8	70-80%	4.5 mths – 5.1 mths	\$750k – \$850k	High
9	80-90%	5.1 mths – 6 mths	\$850k – \$1.0m	Very High
10	>90%	> 6 mths	> \$1.0m	Extremely High

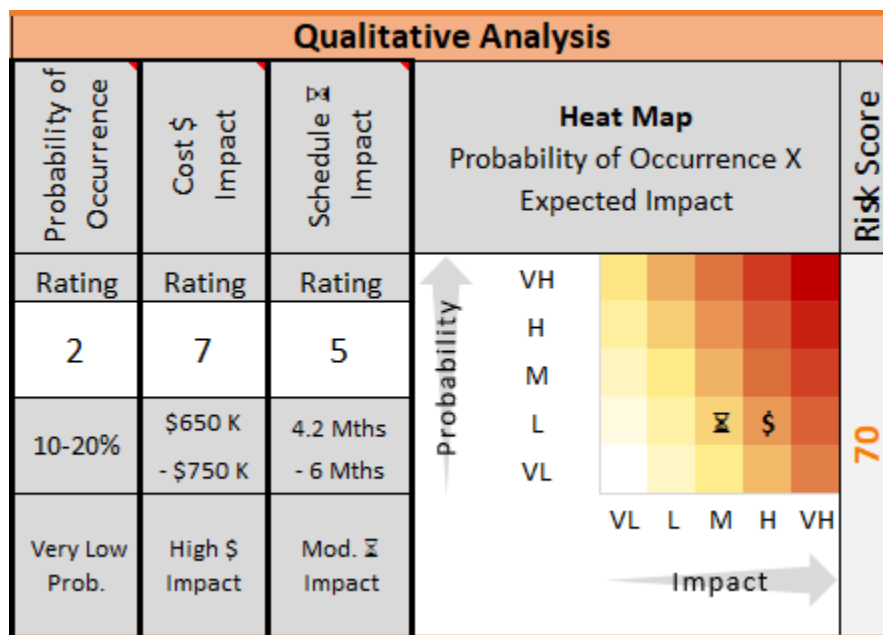
The values of this table can be modified to scale the risk analysis to the project size. The following is an example of qualitative risk analysis using the risk rating table in this risk register tool.

Risk description: The design team anticipates approximately 1000 CY of contaminated soil. **If** the contractor encounters more contaminated soil than anticipated, **then** the project costs will increase and the schedule may be delayed.

Risk analysis: Probability of occurrence – 2 (low, 10% – 20%). Cost impact – 7 (high, approximately \$650,000 – \$750,000). Schedule impact – 5 (moderate, approximately 4.2 – 6 months).

If the tool developed by the Project Risk Management Program is used, the analysis looks like the following figure.

Figure 2: Project Risk Register Tool – Qualitative Analysis Example



During qualitative risk analysis, the accuracy of the cost and schedule impacts is not critically important. The intent is to be reasonably accurate, but not unproductive. For most risks, rating for each risk should be completed within five minutes.

3.3.2 Quantitative Risk Analysis

A quantitative risk analysis evaluates the probability of the risk occurring and, if the risk were to occur, evaluates its cost and schedule impact in terms of numbers (i.e. 20% probability, cost impact \$100K to \$150K, schedule impact 3 to 6 months).

The following is an example of quantitative risk analysis:

Risk description: The design team anticipates approximately 1000 CY of contaminated soil. **If** the contractor encounters more contaminated soil than anticipated, **then** the project costs will increase and the schedule may be delayed.

Risk analysis: 15% probability of occurrence, cost impact range \$500K to \$800K, schedule impact range 3 to 6 months.

We use quantified risks to conduct a cost risk assessment. A cost risk assessment evaluates quality and completeness of the project's cost and schedule estimate. It identifies, assesses and quantitatively analyzes project risks to produce a probabilistic, risk-based cost and schedule estimate for the project.

Pursuant to DES 01-02, applicable STIP projects that exceed \$25 million in estimated total project cost are required to conduct a quantitative risk analysis that produces a risk-based schedule and cost estimate. Furthermore, a quantitative risk analysis is encouraged for projects that are less than \$25 million and have complex elements.

As agreed upon by the TPM or RE-CP, the Project Risk Management Program can help coordinate or facilitate all aspects of a quantitative risk analysis. This includes assembling subject matter experts, coordinating project base estimate validation, facilitating the quantitative risk analysis, compiling the report and tracking the quantitative risk analysis results.

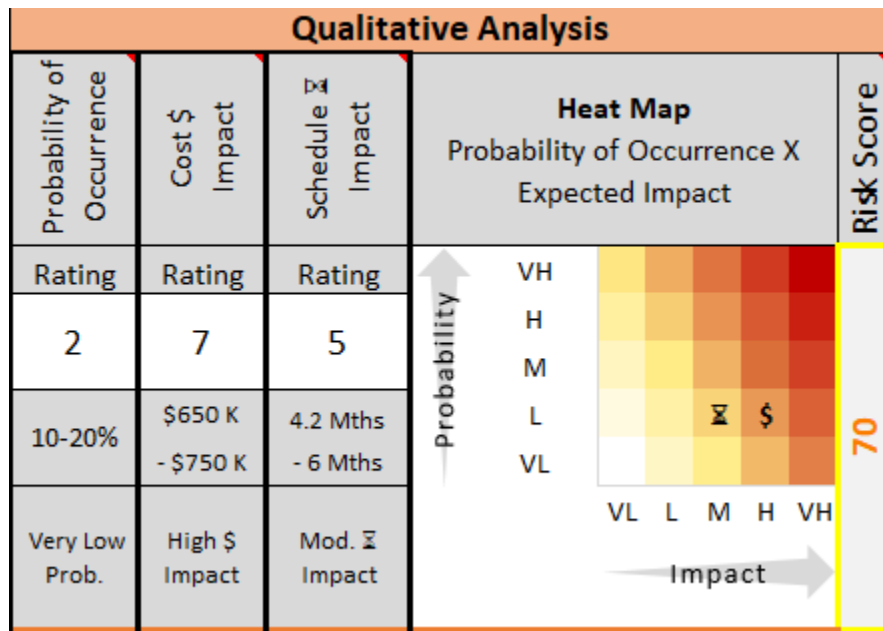
3.4 Evaluate and Prioritize Risk

Phase four of the risk management process is to evaluate and prioritize your risks.

In this step, the project team evaluates the results of the risk analysis and rank each risk according to the project's priorities. The intent of this evaluation is to provide guidance on how to allocate the limited resources for risk response.

The aforementioned project risk register tool developed by the Project Risk Management Program produces a risk score based on the risk analysis of the project team. You can find the risk score to the right of the heat map, as shown in the following figure.

Figure 3: Project Risk Register Tool – Example Risk Score



The risk score in this tool is a simple multiplication of the risk rating values. Threat risks will have positive risk scores. Opportunity risks will have negative risk scores. This can be used to differentiate the magnitudes of the each risk, thus providing a basis for ranking.

However, this tool does not have the capacity to capture risk impact beyond cost and schedule in its risk score, for example political risk. Risks that are identified that have an impact beyond cost and schedule should be reviewed with the area manager or an appropriate stakeholder to determine how it should be prioritized.

3.5 Plan Risk Response

The project team identifies a risk response strategy that is best for each risk, then selects specific actions to implement that strategy. Risk response actions are identified and assigned a risk owner that takes responsibility for the risk response. This process ensures each risk requiring a response has an owner.

There are several basic risk response strategies.

- For threats, the project team can mitigate, avoid, transfer or accept.
- For opportunities, the project team can enhance, exploit, share or accept.

3.5.1 Threat Risk Response Actions

Avoid

“Risk avoidance is when the project team acts to eliminate the threat or protect the project from its impact (reducing the probability of occurrence of a risk to 0%). [Risk avoidance] may be appropriate for high-priority threats with a high probability of occurrence and a large negative impact” (PMI, 2017).

“There are two types of avoidance action: (1) remove the cause of the risk (risk trigger), or (2) execute the project in a different way while still aiming to achieve project objectives. Not all risks can be avoided or eliminated, and for others this approach may be too expensive or time-consuming. However, this should be the first strategy considered for each risk and should be the primary strategy for high probability or high impact risks” (Hillson, 2004).

Avoidance action should be taken on risks that have a high probability of occurrence and a high impact on project objectives.

Transfer

“Transfer involves shifting ownership of a threat to a third party to manage the risk and to bear the impact if the threat occurs. Risk transfer often involves payment of risk premium to the party taking on the threat.

We can transfer risk through a range of actions that include, but are not limited to, the use of insurance, performance bonds, warranties, guarantees and so on. Agreements may be used to transfer ownership and liability for specified risks to another party” (PMI, 2017).

Mitigate

Take risk response action to reduce impact or probability of occurrence of a risk event.

“In risk mitigation, we take action to reduce the probability of occurrence and/or impact of the threat” (PMI, 2017). This is the most common risk response strategy.

Accept

Risk acceptance acknowledges the existence of a threat, but no proactive action is taken. This strategy may be appropriate for low-priority threats, and it may also be adopted where it is not possible or cost-effective to address a threat in any other way. Acceptance can be either active or passive.

“The most common active acceptance strategy is to establish a contingency reserve, including amounts of time, money, or resources to handle the threat if it occurs. Passive acceptance involves no proactive action apart from periodic review of the threat to ensure that it does not change significantly” (PMI, 2017).

“Risks that are uncontrollable (no response actions are practical) are also accepted” (Hillson, 2004).

Acceptance is a common strategy for risks that have a low probability of occurrence. However, accepted risks that have a very low to low probability of occurrence and very high to extreme impact on project objectives should be closely monitored, as they can have devastating consequences to a project. These occurrences are known as black swan events.

3.5.2 Opportunity Risk Response Actions

Exploit

The exploit strategy may be selected for the high-priority opportunities where the organization wants to ensure that the opportunity is realized. This strategy seeks to capture the benefit associated with a particular opportunity by ensuring that it definitely happens, increasing the probability of occurrence to 100%.

“Examples of exploiting responses may include assigning an organization’s most talented resources to the project to reduce the time to completion, or using new technologies or technology upgrades to reduce cost and duration” (PMI, 2017).

Opportunity risks that have high positive impact on project objectives, known as golden opportunities, should be exploited.

Share

Sharing involves transferring ownership of an opportunity to a third party so that it shares some of the benefit if the opportunity occurs. It is important to select the new owner of a shared opportunity carefully so they are best able to capture the opportunity for the benefit of the project.

“Risk sharing often involves payment of a risk premium to the party taking on the opportunity. Examples of sharing actions include forming risk-sharing partnerships, teams, special-purpose companies, or joint ventures” (PMI, 2017).

“Transferring threats and sharing opportunities are similar in that a third party is used. Those to whom threats are transferred take on the liability and those to whom opportunities are allocated should also be allowed to share in the potential benefits” (Hillson, 2004).

Enhance

The enhance strategy is used to increase the probability and/or impact of an opportunity. Early enhancement action is often more effective than trying to improve the benefit after the opportunity has occurred.

“The probability of occurrence of an opportunity may be increased by focusing attention on its causes. Where it is not possible to increase probability, an enhancement response might increase the impact by targeting factors that drive the size of the potential benefit” (PMI, 2017).

“This response aims to modify the size or scope of the positive risk. We enhance the opportunity by increasing its probability, impact or both, thereby maximizing benefits realized for the project. If the probability can be increased to 100% this is effectively an exploit response” (Hillson, 2004).

Accept

Accepting an opportunity acknowledges its existence, but we do not take proactive steps to realize it.

“This strategy may be appropriate for low-priority opportunities, or those in which it is not possible or cost-effective to address an opportunity in any other way” (PMI, 2017).

3.5.3 Risk Escalation Procedures

Most risk related decisions are made at the project team lead level. The project team may escalate risks that significantly impact the project's scope, budget, schedule, change management, technical performance and business performance objectives. Additionally, the project team may escalate risks needing cross-organization involvement, that are controversial, or require senior management involvement or decisions.

Escalation is also appropriate when the project team or project sponsor agrees a threat or opportunity is outside the scope of the project or the proposed response would exceed the authority of the TPM or RE-CP.

“Escalated risks are managed at the program level, enterprise level, or other relevant part of the organization, and not on the project level. It is important that ownership of escalated risks are accepted by the relevant party in the organization. Generally, risks are escalated to the level matching the objectives that would be affected if the risk occurred” (PMI, 2017).

3.6 Implement Risk Response

The Implement Risk Response Phase involves executing agreed-upon risk response plans and is performed throughout the project.

“The key benefit of this process is that it ensures the project carries out agreed-upon risk responses in order to address overall risk exposure, minimize individual threats and maximize individual opportunities” (PMI, 2017).

Risk owners must take action to respond to the identified risks, including designating staff to implement or otherwise support the risk response action. Focusing on risks of most significance can shift the odds in favor of project success. The proposed risk response plan for each risk event should be included in the plan and clearly described to provide a clear course of action.

3.7 Risk Monitoring and Review

The process of monitoring previously identified risks, and reevaluating existing risks to verify the planned risk response strategies for their effectiveness makes up the Risk Monitoring and Review Phase. After risk response actions have been implemented, the project team must track and record risk response effectiveness and any changes to the project risk profile.

Activities involved in risk monitoring include:

- Establishing periodic reviews, i.e. project milestones, and scheduling risk monitoring in the project plan.
- Ensuring that all requirements of the plan are being implemented.
- Assessing current risks as defined in the plan.
- Evaluating effectiveness of actions taken.
- Identifying status of actions to be taken.
- Validating previous risk assessments (probability of occurrence and impact).
- Validating previous assumptions and noting any new assumptions.
- Identifying new risks.
- Tracking risk response.
- Communicating risk management status and risk response action to the area manager and project sponsors, as appropriate.

Activities involved in risk review include:

- Validating risk response strategies and alternatives.
- Reanalyzing the risk after completing risk response action to determine the residual risk.
- Taking corrective action when actual events occur.
- Assessing impact on the project of actions taken (scope, cost, time, and resources).
- Identifying new risks resulting from risk mitigation actions.
- Ensuring the plan is regularly maintained and updated. At a minimum, the plan must be updated at the completion of these designated milestones: Design Acceptance Phase (DAP), Preliminary Plans, Advance Plans, Final Plans, and Plans Specifications & Estimates (PS&E).
- Ensuring change control addresses risks associated with the proposed change, i.e. change management request or contract change order.
- Revising risk management documents to capture results of mitigation actions.
- Communicating risk management status and risk response follow-through to the area manager and project sponsors, as appropriate.

3.8 Project Risk Management Implementation through Project Development

Project scoping teams are required to generate a project risk register that includes the following:

- A project risk register that identifies and describes risks.
- Qualitative risk assessment to allow for prioritization and risk scoring.
- Scoping assumptions regarding each risk event.

During the Initiation Phase of the project, the project team meets to generate the plan for managing project risks, including the project risk register. It is critically important that the project team participate in this process, as they are project's primary risk experts and the project will benefit from their collective knowledge.

For most projects, the initial risk assessment for a project is a two to four hour meeting. The team should generate the plan for managing project risks early in the initiation phase of the project and include the following:

- A project risk register that identifies and describes risks.
- Qualitative risk analysis of scope, schedule, and budget risks to allow for prioritization.
- Response strategy plan that includes a risk owner and a detailed description of planned actions.
- Risk monitoring and review log.

As the project evolves through the Project Development Phase, the risk profile changes and project understanding grows. Previously identified risks may change and new risks may emerge. To document the project's development, update the plan when:

- A significant risk retires.
- A significant risk is triggered.
- The project completes the following milestones: DAP, Preliminary Plans, Advance Plans, Final Plans and PS&E.

All versions of the risk management plan must be retained as part of the project's official record.

Updates of the plan may be included in a standard milestone comment review meeting, when project teams often discuss risks. For example, the risk plan at DAP will likely have more active risks than the plan will at Final Plans. However, the DAP version of the plan should still exist so it can be reviewed, if necessary.

Updating the plan for managing risks will include:

- Versioning of the plan for project documentation.
- Reevaluating each risk status.
- Rerating risks to track the reduction or gain in risk score.
- Updating the risk monitoring and review section with a narrative describing risk response actions taken including risk retirement.
- Risk elicitation to determine if new risks have occurred through the course of project development.
- If new risks have emerged, qualitative risk analysis of new scope, schedule, and budget risks to allow for prioritization.

- Response strategy plan for new risks that includes a risk owner and a detailed description of actions to be taken.

Project risk management plans are required components of the submittal package at the Project Initiation, DAP and PS&E phase gates. The Project Risk Management Program will use these plans to gather valuable data about our risk management work, including identifying agency enterprise risk items.

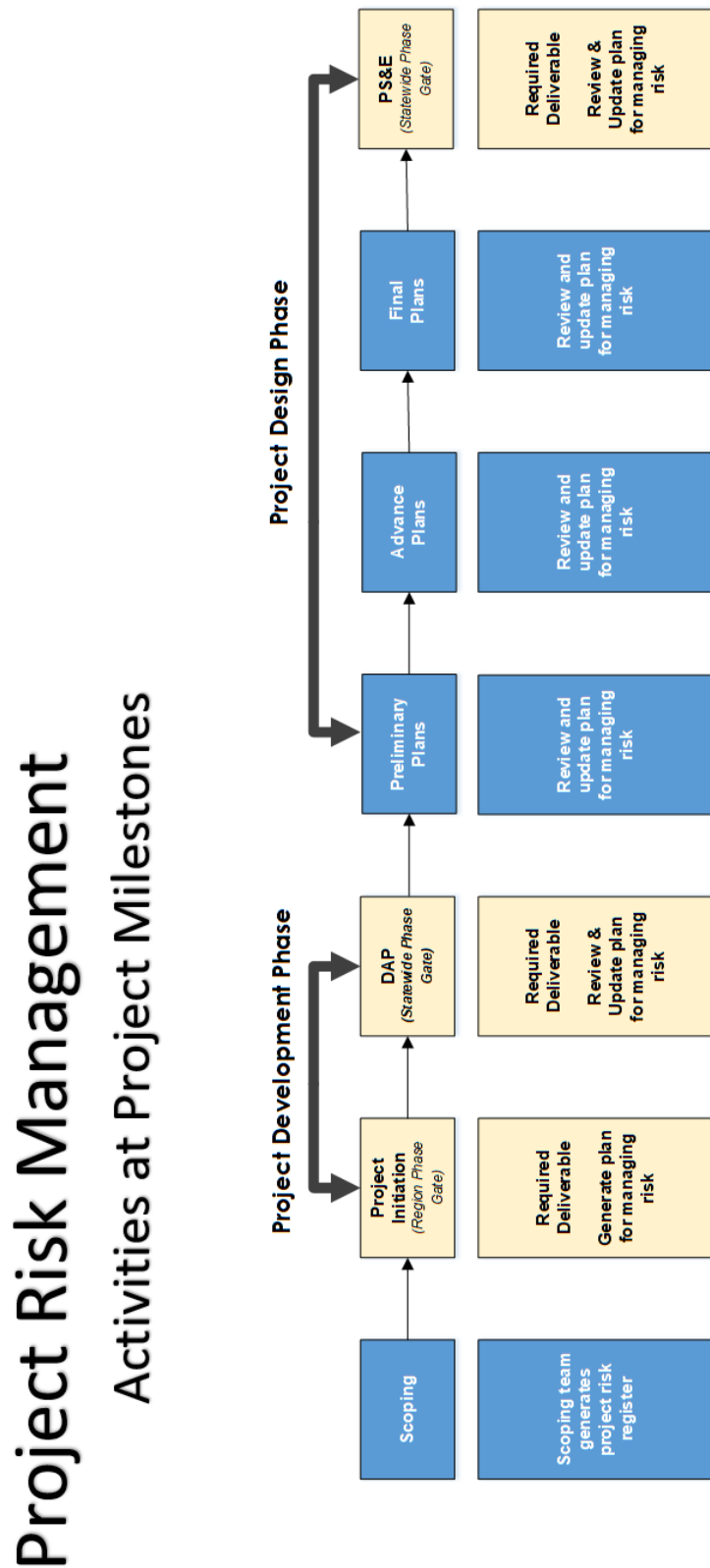
Pursuant to DES 01-02, project risk management implementation through the Project Development Phase is illustrated in figure 4: Project Risk Management Activities by Milestone on Page 19.

3.9 Construction Transition Meeting

As a project transitions to the construction phase of the project lifecycle, a construction hand-off meeting will be held specifically to review the risk register with the project construction administration leadership. At a minimum, this meeting includes the following activities:

- Review of the entire plan with construction administration leadership, specifically highlighting active and high severity risks.
- Diligent reviewing of risks that have been accepted as a response strategy.
- Discussion of how the risks evolved during project development.
- Identification, analysis and development of any new risks that have arisen since the PS&E phase.
- Documentation of the dialogue and exchange.

Figure 4: Project Risk Management Activities by Milestone



References

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