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1.0 Scope

Identify the risks associated with products, activities or services that can be controlled and influenced and prioritize mitigation of the risk.

2.0 **Objective**

, dwide The identification of risks is a key element of the business operation, as these determine those issues and areas that should be the primary focus for monitoring control and improvement. Risks associated with products, activities or services should be evaluated and scored in terms of opportunity, probability and severity according to their risk. A risk can be defined as

A risk priority number (RPN) is calculated for each

risk and graphed as a Pareto Distribution by sorting in descending order to prioritize risk mitigation efforts.

3.0 **Process Steps**

Identify risk categories,

Rate the opportunity, probability and severity for each risk,

attes

Analyze risks by RPN using a Pareto Distribution,

Re-assess risks.

4.0 Requirements

4.1 Definitions

Opportunity Score

The opportunity score for a risk is the frequency the activity occurs. Using a scale from 1 to 5, an activity that occurs one time has an opportunity score of 1. If the activity occurs regularly then the opportunity score is 5.

Probability Score

The probability score is the likelihood that the risk will actually occur; 1 if not likely and 5 if most likely to occur.

Severity Score

The severity score indicates the level of risk on the business operation; 1 if no impact and 5 if there is a severe impact on cost, quality or schedule.

4.2 Identification of Functional Area Risks

The management team should use their best judgment regarding the level of detail required to conduct a comprehensive review. Once the management team has identified potential risk categories then

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The team should document the risks within a functional area using the worksheet in Figure 1 or Figure 2; for example,

The management team should rate the significance of each risk using a numerical ranking scale from 1 to 5 and the following criteria. The functional areas of below are common to all business operations but

4.4 Calculating the Risk Priority Number

The risk priority number (RPN) that is used in the Pareto Distribution chart is calculated by

Figure 1 or Figure 2. The remaining columns are summed and added to the product to weight the results, then the risk priority numbers are prioritized using a Pareto Distribution and actions are taken to mitigate each risk. The team should

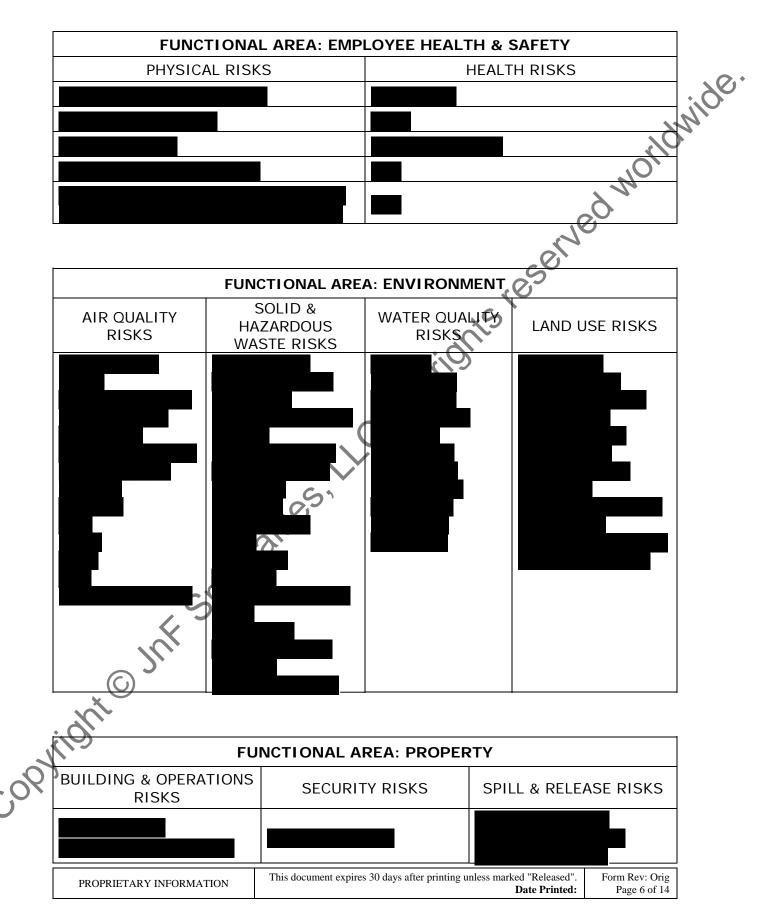
- see Figure 1 and Figure 2 examples.

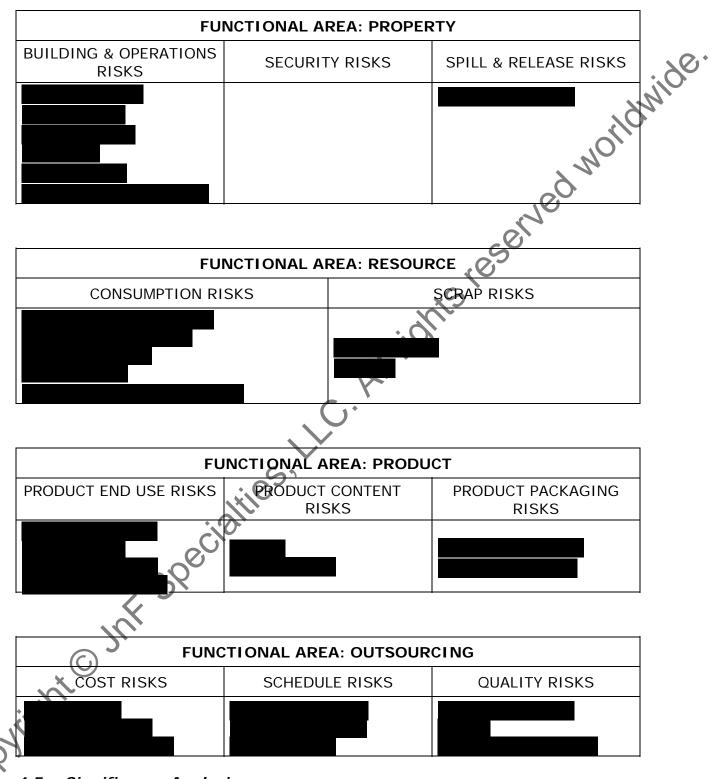
Typical Risk Categories and Potential Risks:



A guidance list of potential risks for functional areas is provided in the following tables. The management team should identify risk categories that are appropriate to the targeted functional area. The following risks are for illustrative purposes only the risk assessment team should brainstorm to generate a detailed list of potential risks that are appropriate to the selected risk categories.

$\sim 0^{2}$	FUNCTIONAL AREA: EMPLOYEE HEALTH & SAFETY			
\mathcal{O}	PHYSICAL RISH	<s< th=""><th>HEALTH RISKS</th><th></th></s<>	HEALTH RISKS	
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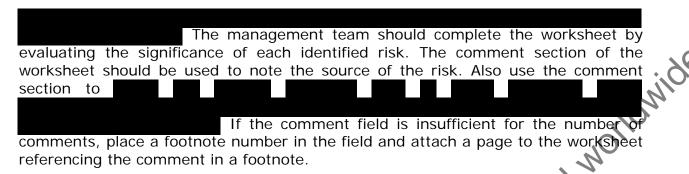




4.5 Significance Analysis

After potential risks have been identified for a functional area, the significance ranking process will evaluate and score each risk according to the following criteria:

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4.6 Example Functional Area: Employee Health & Safety

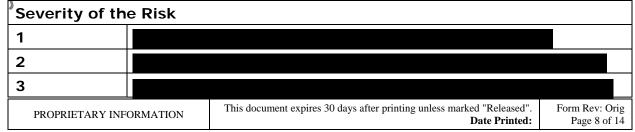
4.6.1 **Opportunity or frequency of occurrence of the risk** – defined as the frequency of occurrence of safety related employee accidents or incidents or the frequency of employee accidents occurring compared to the facility as a whole. Another point of view for this evaluation would be

Opportu	nity or Frequency of Occurrence of the Risk
1	
2	
3	
4	
5	

4.6.2 **Probability or likelihood of occurrence of the risk** – defined as the expected likelihood of occurrence of safety related employee accidents or incidents.

Pr	bability or Likelihood of Occurrence of the Risk
1	
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3	
4	\odot
5	

4.6.3 Severity of the risk – defined as the actual or potential risk or seriousness of an employee accident.



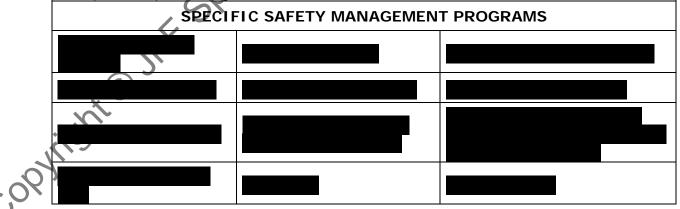
Severity of th	e Risk	
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4.6.4 **Scale of use of the risk** – defined as the actual or potential size, volume or magnitude of the resulting employee safety risk. This should be evaluated as to the number of employees that work in the functional area compared to the facility; obviously, the more employees that work in any given area will have a higher potential for accidents based on the risks for accidents in that area. The best approach is to

Scale of Use	of the Risk	10
1		×S
2		
3		
4		
5	C	

4.6.5 **Legal or regulatory concern** – defined as regulatory exposure of employee safety as related to applicable federal, state and local laws. If the functional area is subject to general safety regulations, the rating would for the area were subject to specific regulations, such as process safety management or a specific contaminant, the rating would

Examples of specific regulations include:



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Legal or	Regulatory Concerr	of the Risk
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3		
4		
5		

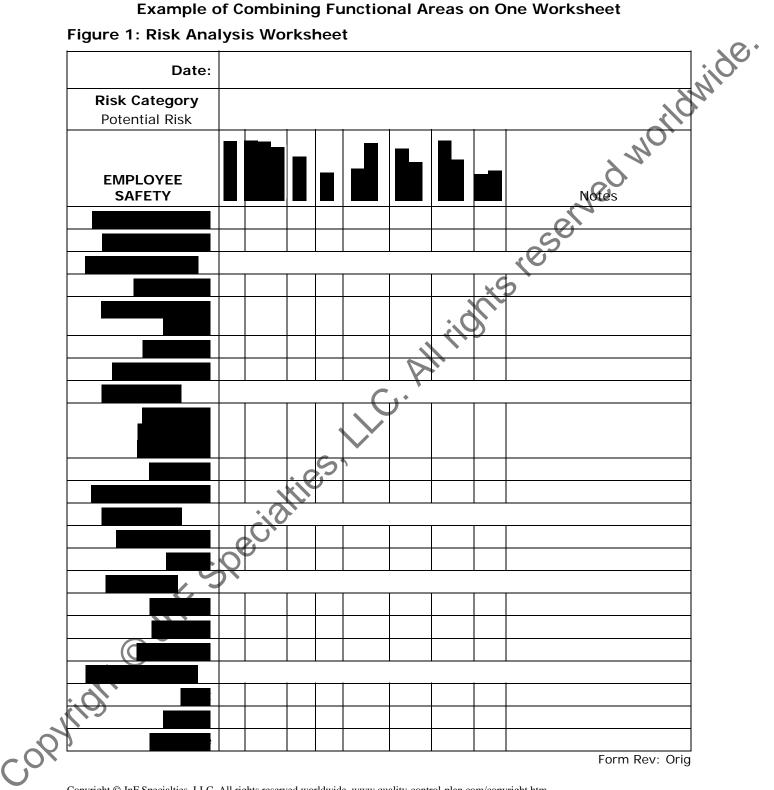
4.6.6 **Degree of control or influence of the risk** – defined as the level of control that the functional area has over employee health and safety; for instance,

Degree of Co	ntrol or Influence of the Risk
1	

4.6.7 **Stakeholder concern of the risk** – defined as the actual or potential risk to employees and

	Stakeholder	Concern c	of the Risk	< c					
		No site p concern	personnel,	public,	regulatory	agency c	or inter	est gr	oup
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5	5								
	Using the abo management to	•		al area	for Employ	vee Health	and	Safety,	the
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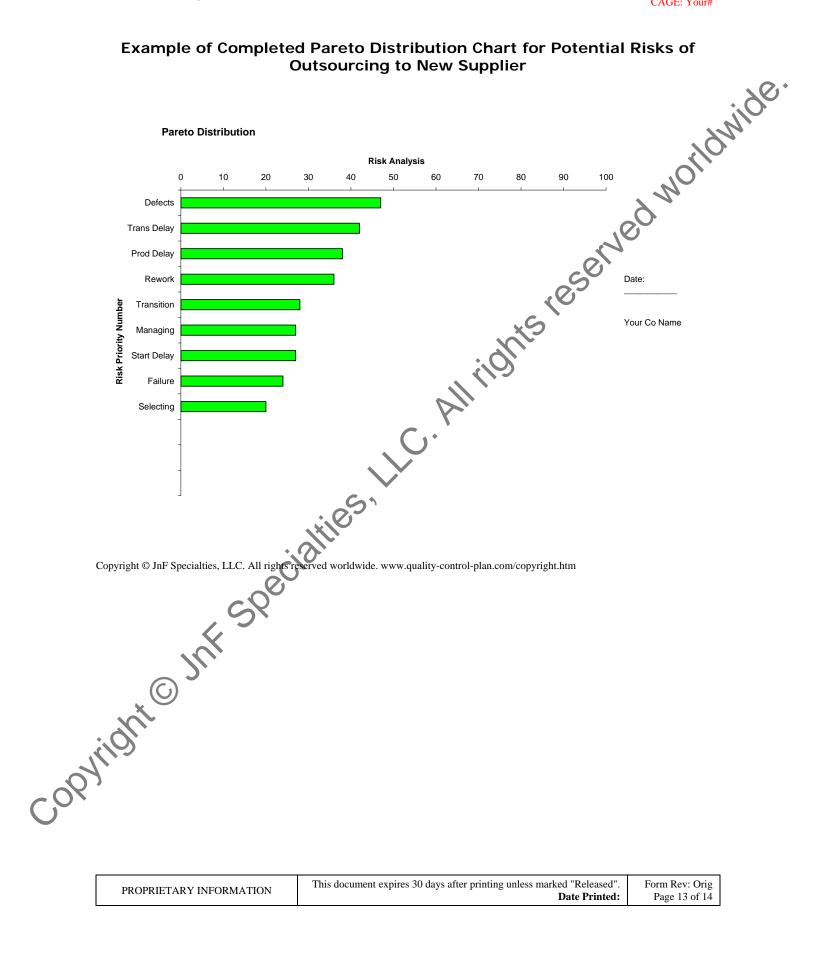


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Notes More Notes Date: **Risk Category** _ _ _ Potential Risk COST Cost of selecting new Supplier Ĥ SCHEDULE Start-up delay QUALITY Major / minor defects Copyright © InF Specialties, LLC. All rights reserved worldwide. www.quality-control-plan.com/copyright.htm copyright

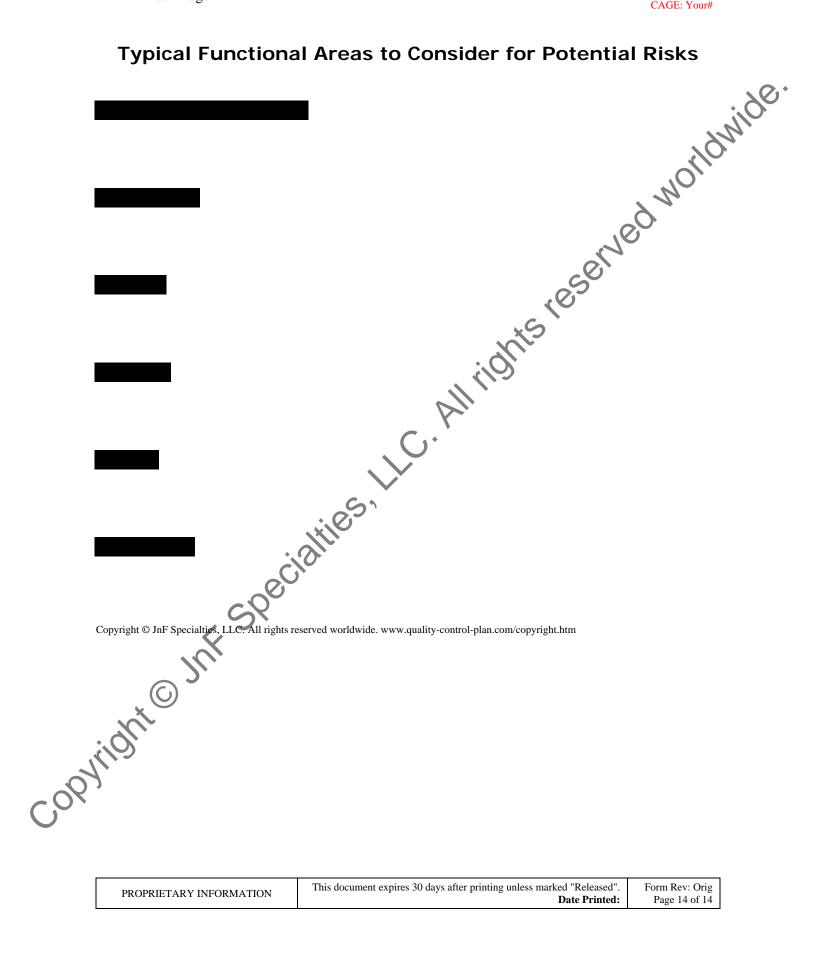
Example of Completed Form for One Functional Area with 3 Risk Categories Figure 2: Outsourcing Risk Assessment



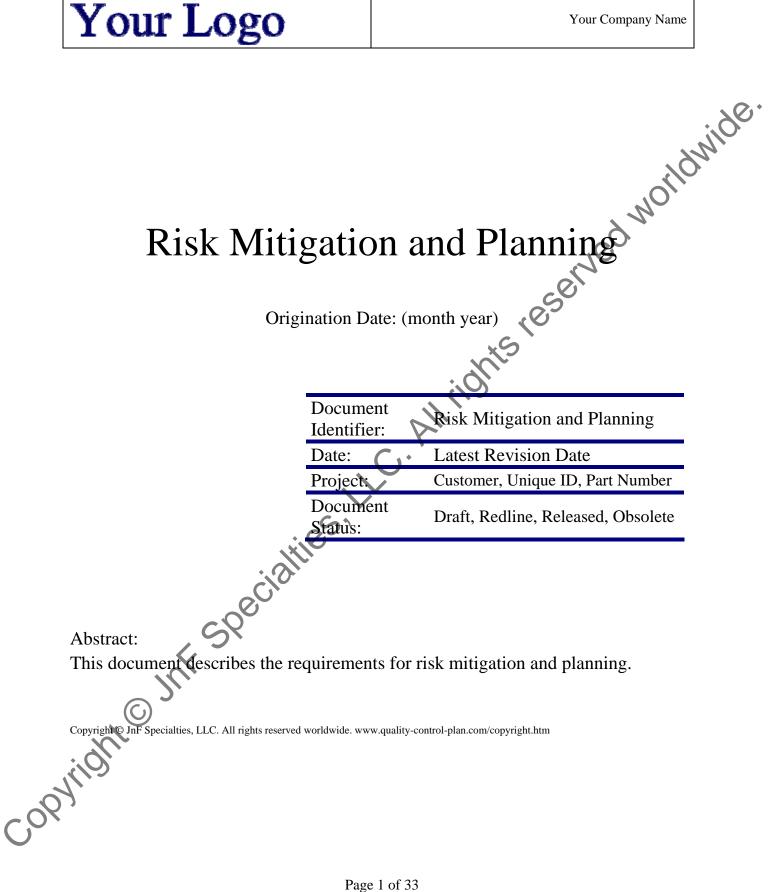
Example of Completed Pareto Distribution Chart for Potential Risks of

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Typical Functional Areas to Consider for Potential Risks



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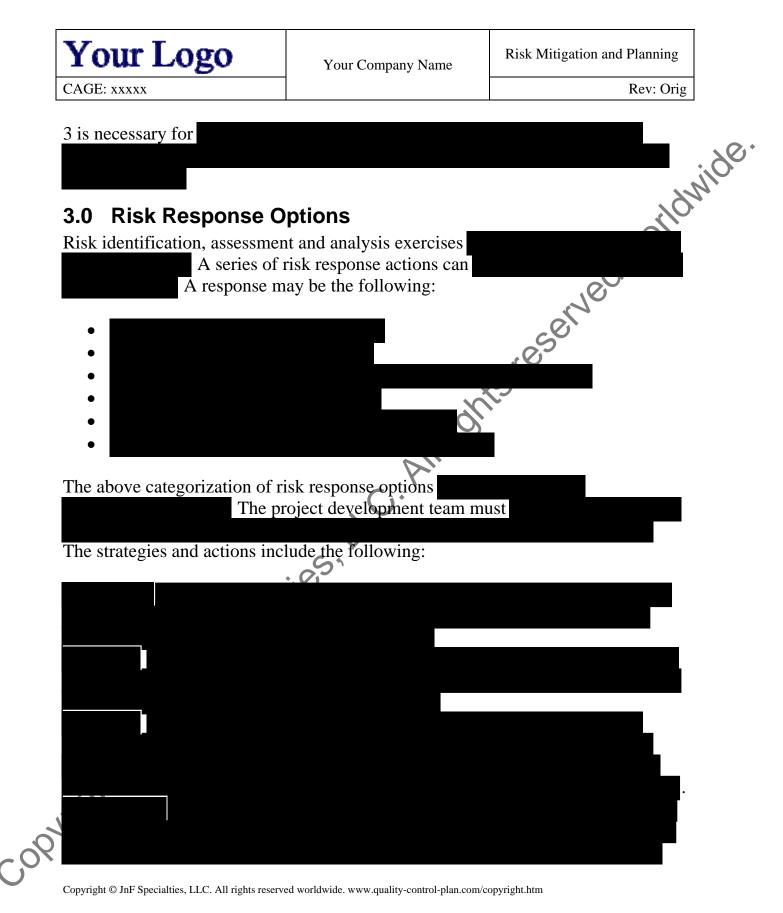
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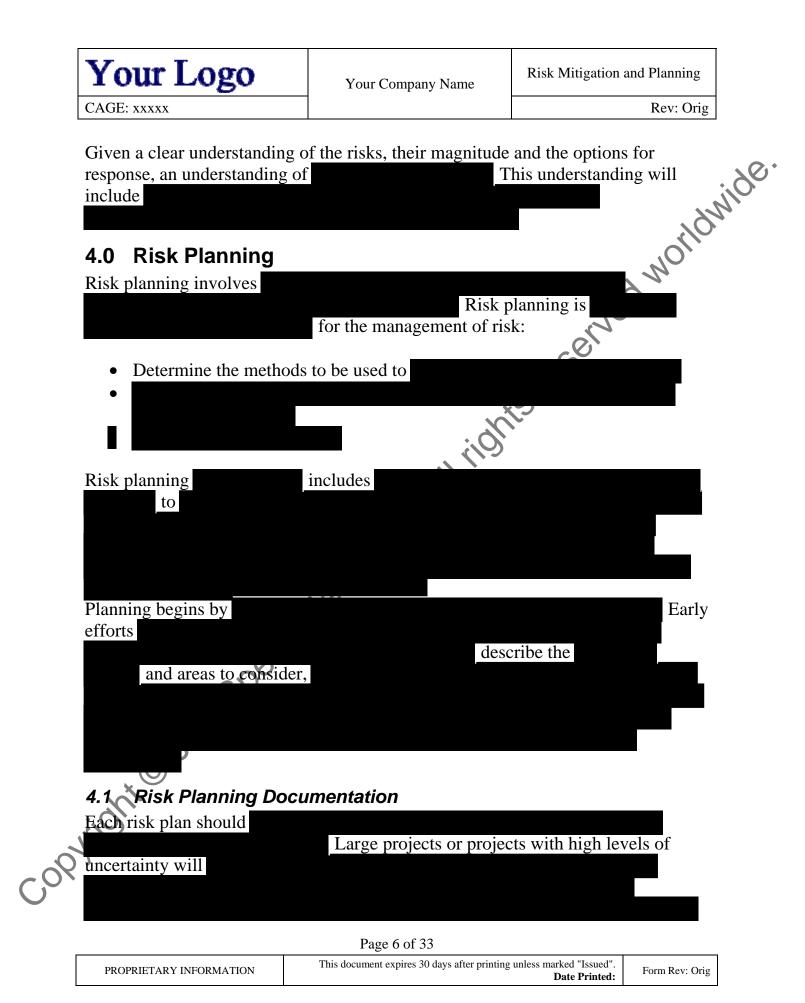
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1.0 Purpose The risk mitigation and plant assessment and analysis to strategies are and planning exercises must		Common The mitigation
mitigation and allocation of 1	risks. Common documentat	for N
Ris	k mitigation and planning e	efforts may necessitate that
Suppliers		
2.0 Objectives of Ris	sk Mitigation and Pla	anning
The objectives of risk mitiga	tion and planning are	
The process identify		
It ensures that		
Once the Planners, Engineers	s and Managers have	
	ey questions can be posed f	for risk mitigation.
	ey questions can be posed i	of fisk mitigation.
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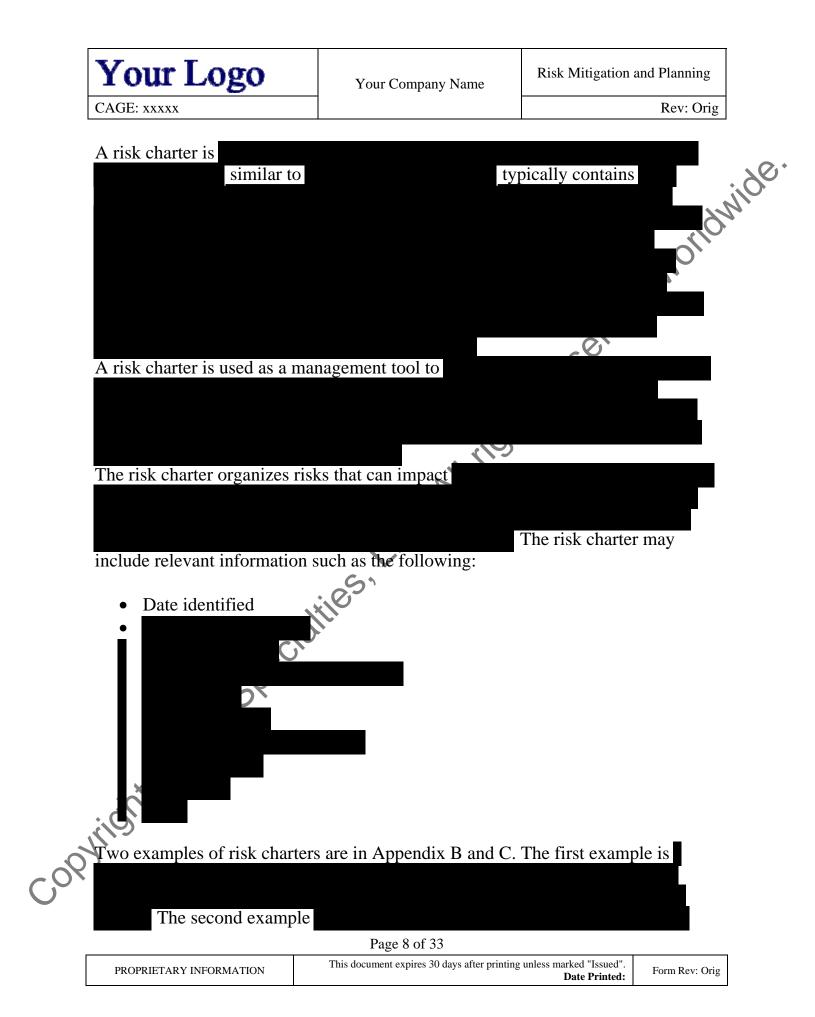
See a sample list of risks in Appendix A. While this sample list can be used to create a list of red flag items for a project, it is

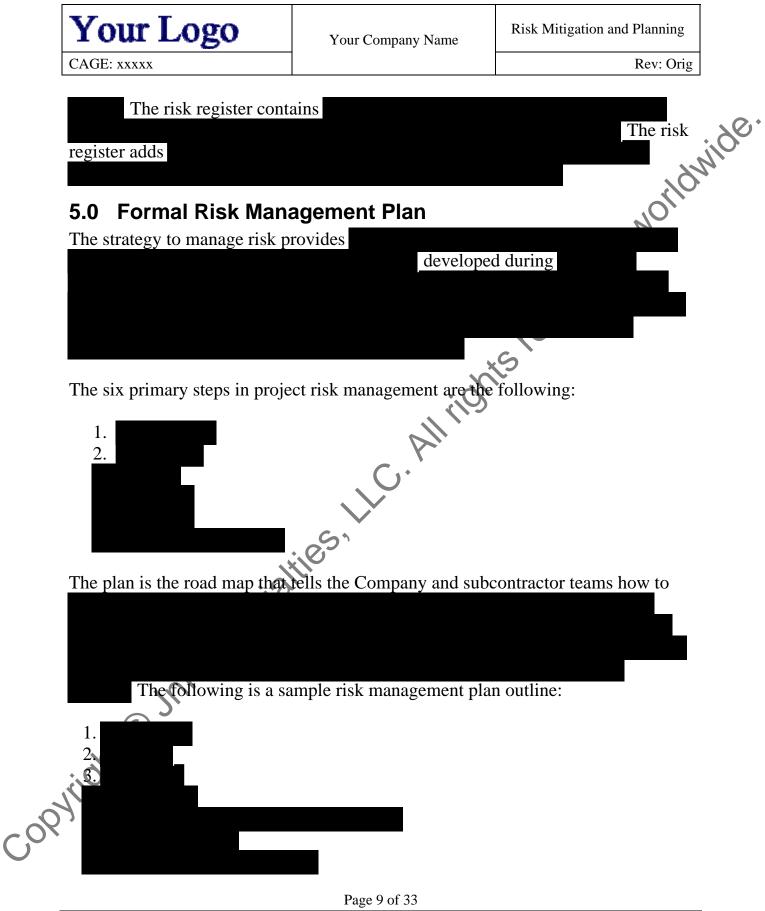
4.3 Risk Charters

The creation of a risk charter is a more formal identification of risks than the listing of red tlag items. Typically, it is

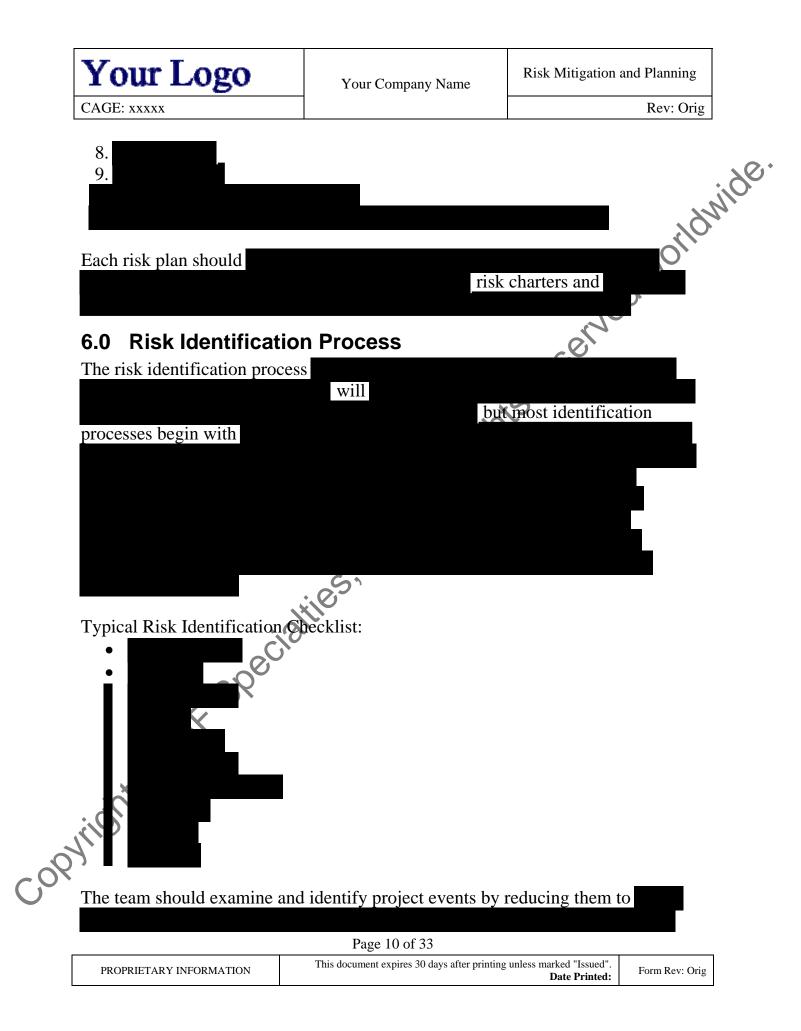
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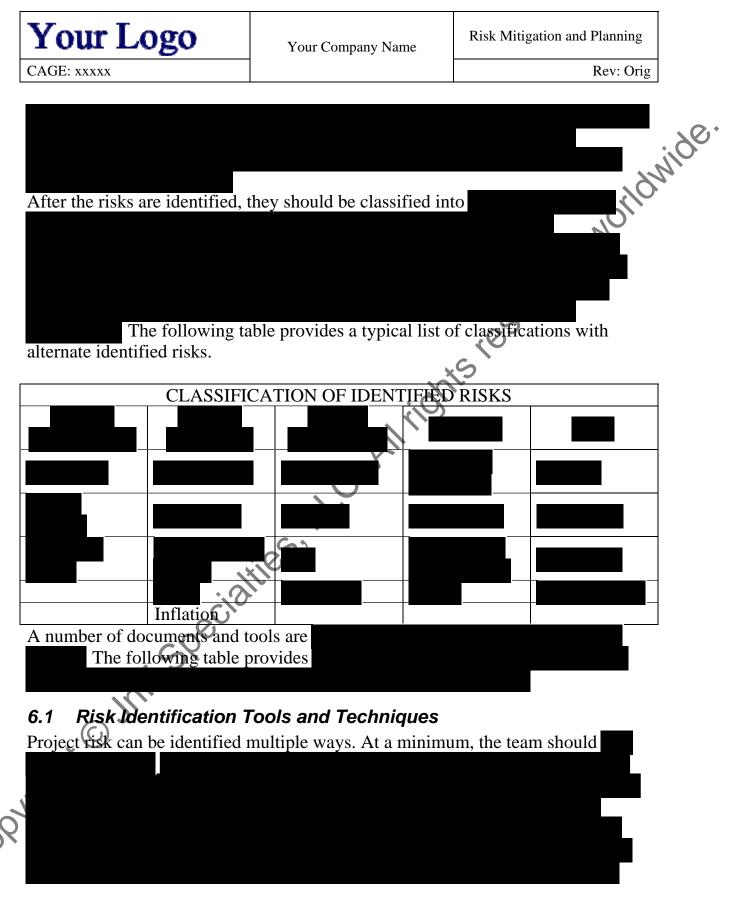
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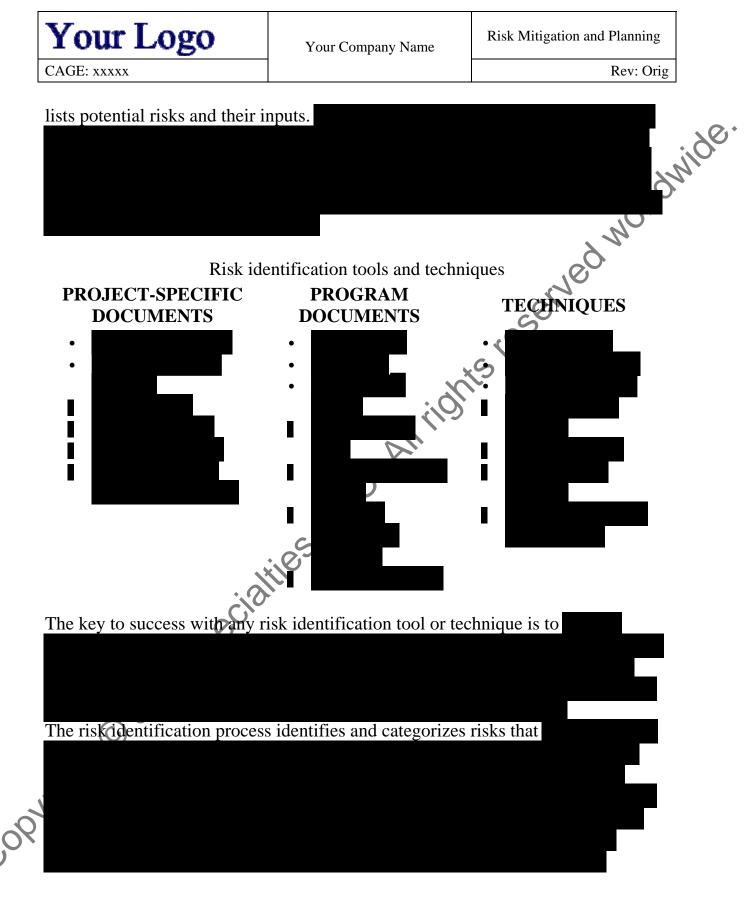


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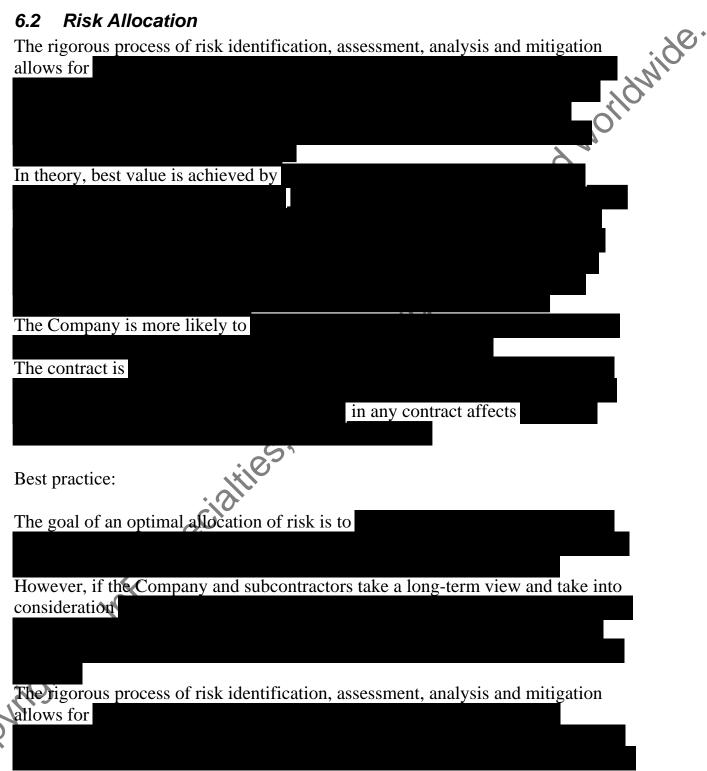
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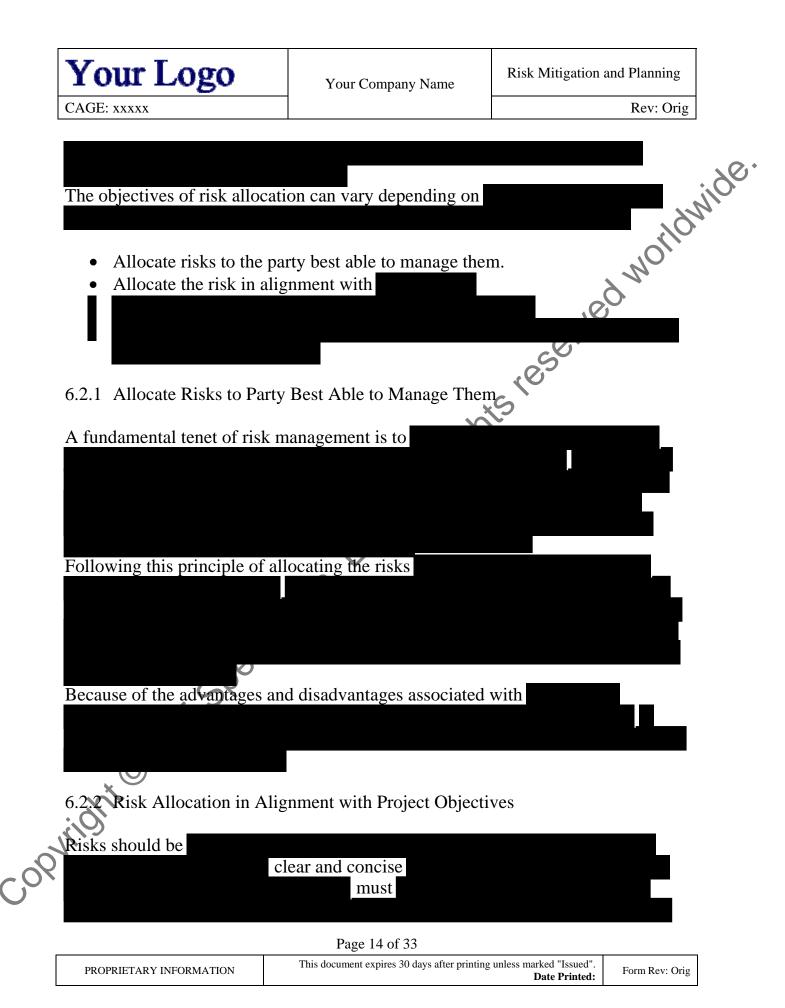
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Risk Allocation 6.2

The rigorous process of risk identification, assessment, analysis and mitigation allows for







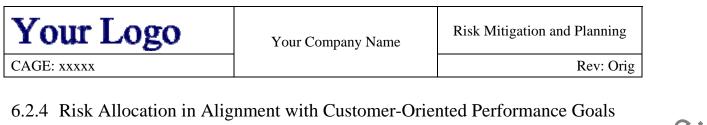
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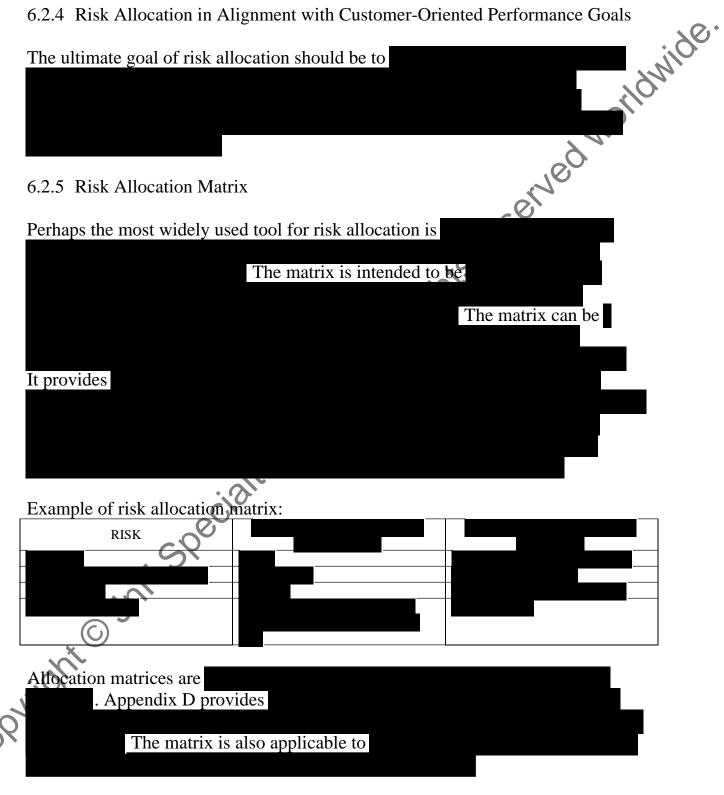
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6.2.3 Risk Sha	ring	G	*		
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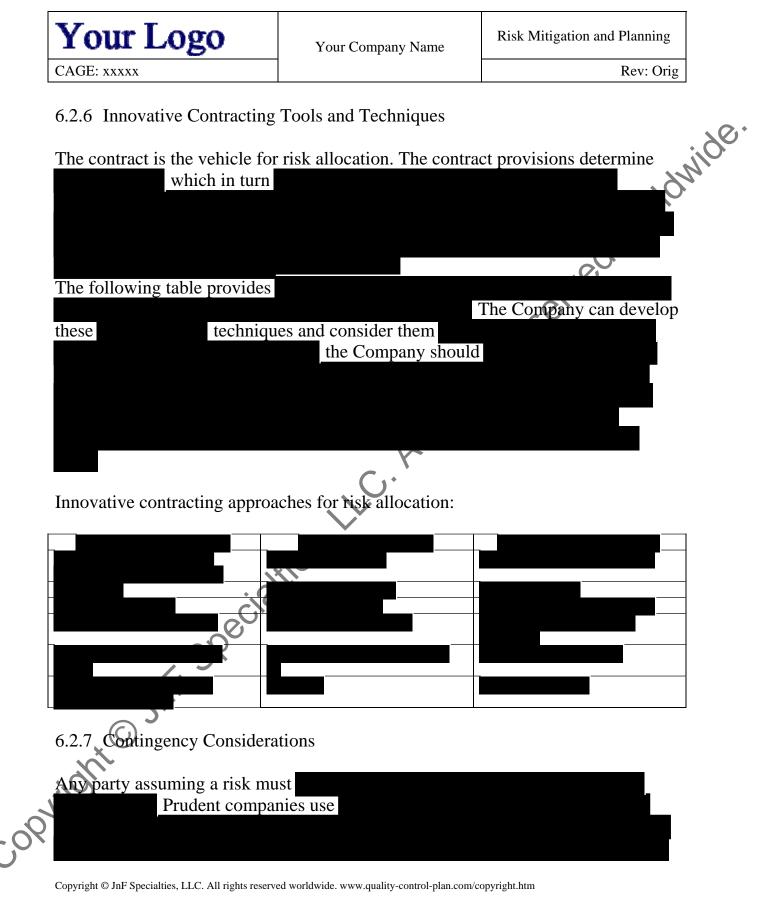
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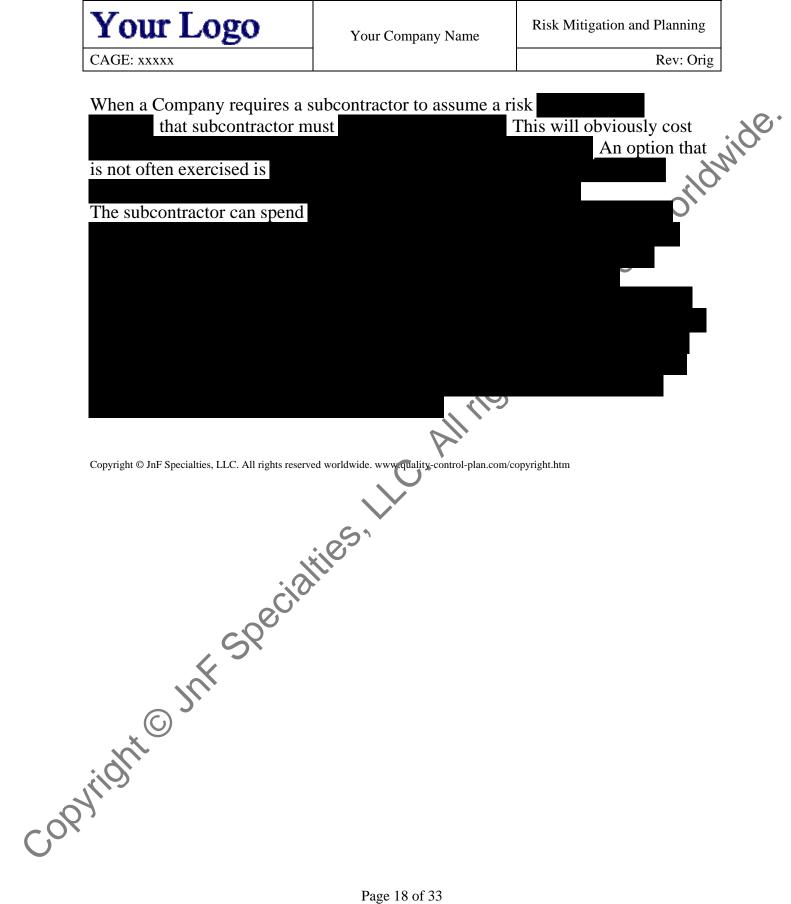


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Appendix A - Risk Identification Checklists - Red-Flag List

1. Project Management Risk Document Checklist

anagement reports vary depending on The following are examples of risk management documents and reports thinking be useful: Risk management reports vary depending on that may be useful: Risk monitoring documentation: 2. Sample Red Flag Item List (reduce list as required) COPYTIE

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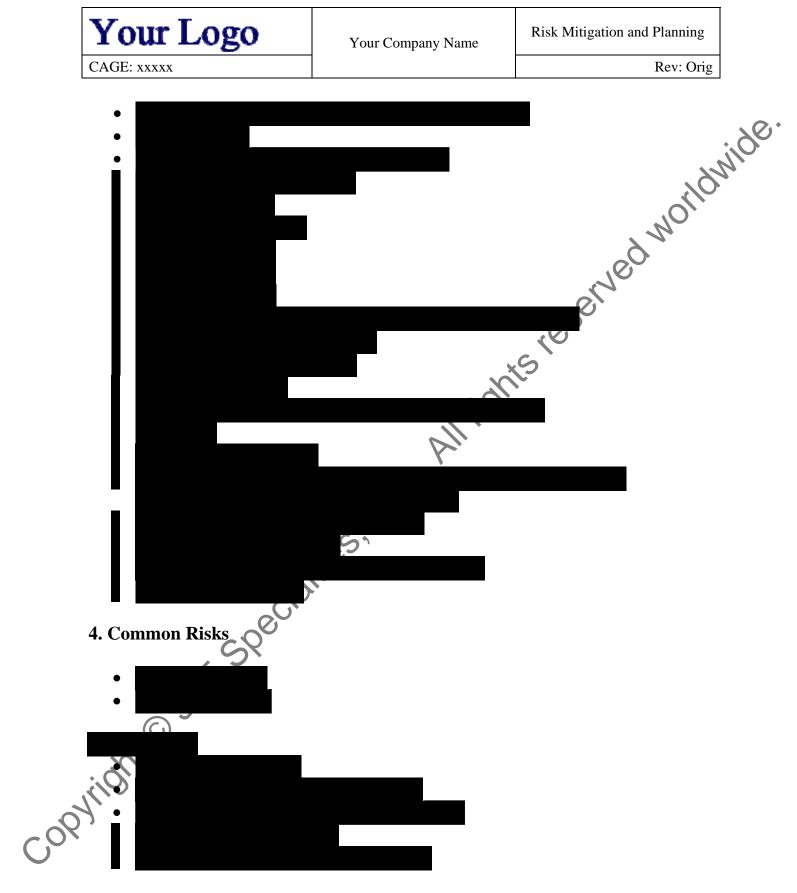




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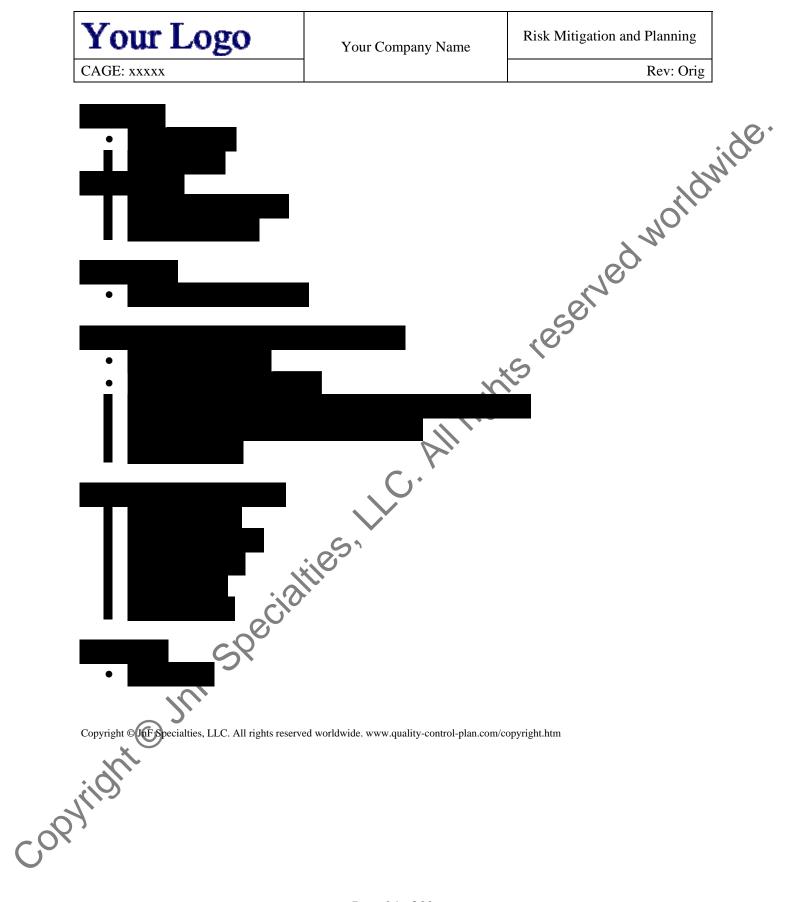
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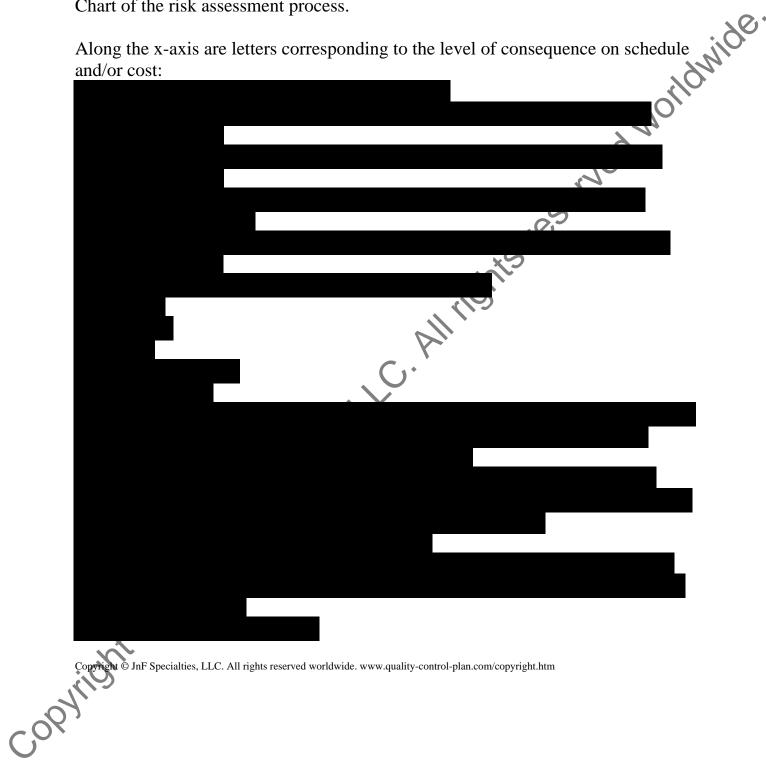
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o worldwide. **Appendix B - Risk Charter** Project Risk Charter Management Plan (Example) T All riot RISK ASSESSMENT ASSESSMENT GUIDE High (Red) Е М M Likelihood D L M M С L M М M Moderate (Yellow) М L b C d è Consequence Low (Green) COR below... Page 25 of 33 This document expires 30 days after printing unless marked "Issued". PROPRIETARY INFORMATION Form Rev: Orig **Date Printed:**



Chart of the risk assessment process.

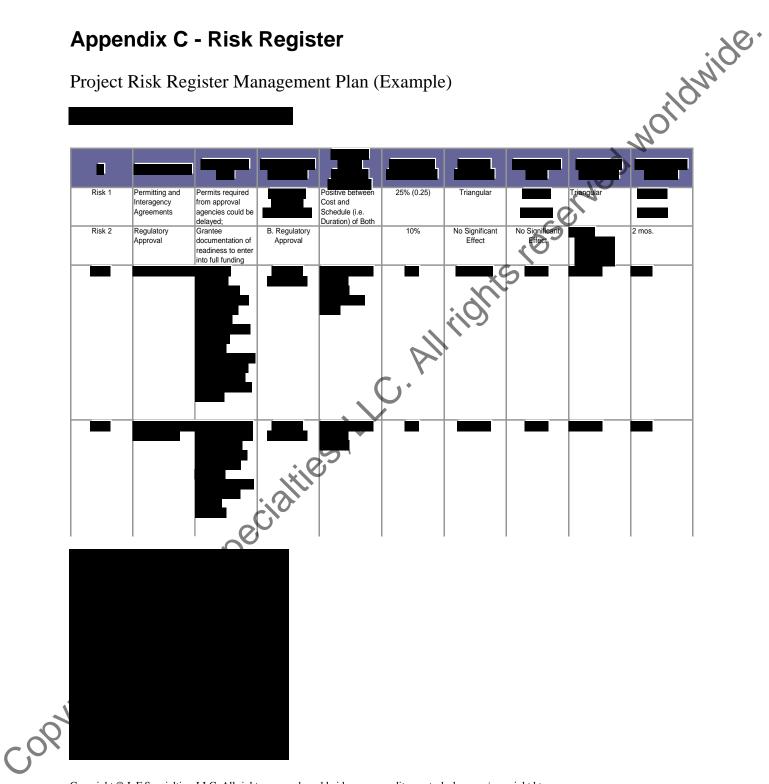


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Appendix C - Risk Register

Project Risk Register Management Plan (Example)



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Appendix D - Design-Build Risk Allocation Matrix

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Appendix E - Critical Elements Risk Assessment





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