Internal Audit Report

Issue Escalation and Resolution for Design-Build Projects

Justina Heath

2022

SOUTH CAROLINA OFFICE OF THE STATE AUDITOR

1. Executive Summary

Objective

Management's objective is to develop and administer design-build contracts in an effective, timely, and efficient manner.

Our objective is to provide assurance that internal controls are adequately designed to manage risks that may hinder the achievement of Management's objectives for Issue Escalation and Resolution for Design-Build Projects.

Background

The Office of Alternative Delivery supports the South Carolina Department of Transportation's (SCDOT) mission of exploring and instituting the successful implementation of alternative project delivery methods. The Office of Alternative Delivery currently administers the Department's Design-Build project delivery program and will continue to adapt and grow.

Prior to the commencement of this engagement, SCDOT restructured responsibilities for the Design-Build Contract Administration process noted above from the Director of Construction Office to the Office of Alternative Delivery. Before this change, the Office of Alternative Delivery's primary involvement in design-build projects only included Project Selection, Project Development, Procurement, and Design Reviews post contract award. It did not include Design-Build Contract Administration.

Conclusion

In our opinion, controls are adequately designed to be partially sufficient for reducing some risks to within the Agency's risk appetite. Risk exposure is determined to be Medium-High.

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2. Forward

Authorization

The South Carolina Office of the State Auditor established the Internal Audit Services division (IAS) pursuant to SC Code Section 57-1-360 as revised by Act 275 of the 2016 legislative session. IAS is an independent, objective assurance and consulting function designed to add value and improve the operations of the South Carolina Department of Transportation (SCDOT). IAS helps SCDOT to achieve its objectives by bringing a systematic, disciplined approach to evaluating the effectiveness of risk management, internal control, and governance processes and by advising on best practices.

Statement of Independence

To ensure independence, IAS reports administratively and functionally to the State Auditor while working collaboratively with SCDOT leadership in developing an audit plan that appropriately aligns with SCDOT's mission and business objectives and reflects business risks and other priorities.

Report Distribution

This report is intended for the information and use of the SCDOT Commission, SCDOT leadership, the Chairman of the Senate Transportation Committee, the Chairman of the Senate Finance Committee, the Chairman of the House of Representatives Education and Public Works Committee, and the Chairman of the House of Representatives Ways and Means Committee. However, this report is a matter of public record and its distribution is not limited.

Acknowledgment

We wish to thank members of management and staff in the Alternative Delivery Division for their cooperation in assessing risks and developing actions to improve internal controls and enhance operating performance.

Lead Auditor

Justina Heath
Manager

Reviewer

Mark LaBruyere
Director of Internal Audit Services

SOUTH CAROLINA OFFICE OF THE STATE AUDITOR
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3. Internal Auditor's Report

September 12, 2022

Ms. Christy A. Hall, Secretary of Transportation
and
Members of the Commission
South Carolina Department of Transportation
Columbia, South Carolina

We have completed a risk and control assessment of the South Carolina Department of Transportation's (SCDOT's) Issue Escalation and Resolution for Design-Build Projects. The objective of this assessment was to contribute to the improvement of risk management by evaluating SCDOT's exposure to risks and the controls designed by Management to manage those risks. Our engagement included two aspects:

- Facilitation of Management's assessment of risks associated with the Issue Escalation and Resolution for Design-Build Projects
- Independent assessment of the design adequacy of internal controls to determine whether those controls effectively manage the identified risks to an acceptable level.

We planned and performed the engagement with due professional care in order to obtain sufficient, appropriate evidence to provide a reasonable basis for our observations and recommendations. Our observations, recommendations, and management's action plans were discussed with management.

George L. Kennedy, III, CPA
State Auditor

4. Engagement Overview

Background

The Office of Alternative Delivery supports the South Carolina Department of Transportation's (SCDOT) mission of exploring and instituting the successful implementation of alternative project delivery methods. The Office of Alternative Delivery currently administers the Department's Design-Build project delivery program and will continue to adapt and grow. Alternative Delivery is comprised of engineers from various disciplines that help identify and deliver innovative projects statewide in a timely and efficient manner.

Design-build is an alternative project delivery method in which a single contract is awarded to provide both design and construction services. In this method of project delivery, external contractors and consultant design firms form an integrated team and assume the responsibility for design and construction. Design-build projects are typically lump sum contracts.

Design-build may allow designers and contractors to introduce innovative design and construction alternatives that are equal or better than the contract requirements while still adhering to all other contract requirements. It also allows contractors to utilize specialized means and methods. Design-build allows the overlap of design and construction activities, often resulting in faster project delivery. The design is often broken into packages or segments, allowing construction to begin on portions of the project while other elements are still being designed.

Design-build procurement differs from the standard design-bid-build procurement process, but procurement laws and regulations are still adhered to.

Objective

Management’s objective is to develop and administer design-build contracts in an effective, timely, and efficient manner.

Our objective is to provide assurance that internal controls are adequately designed to manage risks that may hinder the achievement of Management’s objectives for Issue Escalation and Resolution for Design-Build Projects.

Scope

The Alternative Delivery activity is comprised of four processes involving multiple stakeholders as follows:

1. Project Selection
2. Project Development
3. Procurement
4. Design-Build Contract Administration

We summarize the above processes in Appendix A.

Prior to the commencement of this engagement, SCDOT restructured responsibilities for the Design-Build Contract Administration process noted above from the Director of Construction Office to the Office of Alternative Delivery. Before this change, the Office of Alternative Delivery's primary involvement in design-build projects only included Project Selection, Project Development, Procurement, and Design Reviews post contract award. It did not include Design-Build Contract Administration.

Our scope focused on issue escalation and resolution throughout the lifecycle of the Alternative Delivery activity. We did not review the general risks and controls for the individual processes above. Instead, we focused our engagement on the design adequacy of the related risk and controls, concentrating on issue escalation and resolution.

Methodology

For the processes included in the engagement scope, we performed the following procedures:

1. We discussed with Management their processes and the respective individuals responsible.
2. We facilitated Management's discussion surrounding the risks impacting the activity:
    a. Identify risks that threaten process objectives
    b. Determine if controls are adequately designed to manage the risks to within the Agency's risk appetite
    c. Propose design improvements to controls when risks are not managed to within the risk appetite
3. We evaluated Management's assessment to determine if it was reasonable and comprehensive.
4. We developed observations for controls determined to be inadequate in design.
5. We collaborated with management to develop action plans to improve control design for the identified control deficiencies.
6. While our engagement primarily focused on risk management, we identified other matters that represent opportunities for process improvement.
7. We will collaborate with Management to develop action plans for the identified opportunities for process improvement.

5. Conclusion

Issue Escalation and Resolution for Design-Build Projects Controls

In our opinion, controls are adequately designed to be partially sufficient for reducing some risks to within the Agency's risk appetite. Risk exposure is determined to be Medium-High. Our recommendations to improve control design are described in the Observations section.

While our engagement was primarily focused on risk management, we identified other matters that represent opportunities for process improvement. These matters are detailed in the Performance Opportunities Section.

Development of Management Action Plans

We facilitated Management's development of action plans for each observation and performance opportunity to improve control design with practical, cost-effective solutions. These improvements, if effectively implemented, are expected to reduce the overall risk exposure to an acceptable level (i.e. within the Agency's risk appetite).

We will follow up with Management on the implementation of the proposed actions on an ongoing basis and provide SCDOT leadership with periodic reports on the status of management action plans and whether those actions are effectively and timely implemented to reduce risk exposure to an acceptable level.

Observations

Observation 6.1 **Escalation of Major Project Issues**	**Risk Exposure** **Medium-High**
Division: Alternative Delivery	
Control Assessed: Control 1 – Issue Escalation Matrix	
Control Description: Control 1 – Each contract contains an issue escalation matrix. This matrix details the amount of time each level of responsibility (i.e. field, field supervision, district, etc.) has to resolve an issue. If the employee cannot resolve the problem within the allotted amount of time, the issue must be escalated to the next level of responsibility.	
Process Affected: (See process descriptions in Appendix A on page referenced below) Process 4 – Design-Build Contract Administration	

Observation:
IAS notes that the Design-Build contract administration is more complex than administering SCDOT's standard contract. It is vital that project and program leaders quickly communicate to the contractor and across the Agency to key stakeholders ("key stakeholders" defined as Secretary of Transportation, Deputy Secretary for Engineering, Deputy Secretary for Finance and Administration, and the Chief Counsel) so that issues can be resolved at the appropriate level of management in a timely manner. Based on the importance and cost of projects within the Alternative Delivery program, unmitigated cost and schedule issues on these projects could potentially limit SCDOT's ability to meet its operational goals.

We observed that the issue escalation tool varied from project to project and may not have always been followed as intended for major project issues. Additionally, we observed that, while informal communication practices were in place at the field operations and headquarters levels, there was the opportunity for issues to fail to rise from field operations to the appropriate level at headquarters. In our judgment, the implementation of clear, formalized communication practices for Alternative Delivery projects could mitigate risk exposure to the Agency.

Recommendation 1:
We recommend formalized information sharing between Alternative Delivery and the key stakeholders across the Agency for projects as identified by the key stakeholders in MAP 6.2. Communication should focus on updates on actual and potential changes that affect time and cost so that stakeholders may appropriately plan and adjust their activities as necessary. We recommend that Alternative Delivery provide (1) a monthly status report to the cross-functional team and (2) a meeting with the cross-functional team every other month.

Recommendation 2:
We recommend that Alternative Delivery refine and document an engineering escalation tool that is streamlined for use on its Alternative Delivery projects. The goal of the tool is to resolve issues between contractors and the SCDOT in a timely manner and should be part of a

general framework for contract and project administration.

Recommendation 3:
We recommend that the Agency document the required need for meetings among the field operations, Alternative Delivery, and contractors.

Management Action Plan (MAP) 6.1A

Project status reports outlining current schedule/cost information, milestones and risks are presently being updated on a monthly basis and shared with the Deputy Secretary for Engineering. These status reports will be provided to the key stakeholders on a monthly basis for those projects identified by the key stakeholders as identified in MAP 6.2. In addition, a bi-monthly meeting will be established with the key stakeholders to discuss these projects and other concerns.

MAP Owner:	Construction Alternative Delivery Engineer
Division:	Office of Alternative Delivery
Scheduled Date:	March 31, 2023

Management Action Plan (MAP) 6.1B

The Office of Alternative Delivery will revise the existing standard escalation process that is typically developed during a project's initial preconstruction/partnering meeting. This revised process will be documented and then incorporated into alternative delivery contracts for all projects.

MAP Owner:	Construction Alternative Delivery Engineer
Division:	Office of Alternative Delivery
Scheduled Date:	March 31, 2023

Management Action Plan (MAP) 6.1C

Weekly progress meetings and monthly engineering executive status meetings are currently being utilized on most alternative delivery projects. These meetings will be documented and then incorporated into alternative delivery contracts for all projects.

MAP Owner:	Construction Alternative Delivery Engineer
Division:	Office of Alternative Delivery
Scheduled Date:	March 31, 2023

Observation 6.2
Risk Assessment

Risk Exposure
Medium

Division: Alternative Delivery

Control Assessed:
Control 1 – General Project Risk Assessments
Control 2 – Cost and Schedule Risk Assessments

Control Description:
Control 1 – For projects whose total projected cost is under $500 million, a risk assessment is developed which identifies risks in three categories: high, moderate, and low with the "high" risks being those that are most relevant and critical to the success of the project.

Control 2 – A Cost and Schedule Risk Analysis is performed for projects whose total projected cost exceeds $500 million. With the assistance of a contracted risk manager, risks are compiled for each discipline, escalation, market conditions, etc. Each risk is identified, assigned an owner, and assigned a probability and severity.

Process Affected: (See process descriptions in Appendix A on page referenced below)
Process 1 – Project Selection
Process 2 – Project Development
Process 4 – Design-Build Contract Administration

Observation:
From a risk management perspective, the complexity and level of effort required in the risk assessment process for a project should be commensurate with the potential risks a project may pose to the Agency overall. The projects within Alternative Delivery's portfolio include some of the Agency's most expensive, complex, and visible projects. The Federal Highway Administration (FHWA) requires the completion of a Cost and Schedule Risk Analysis (CSRA) for any project deemed a Major Project, which is defined by FHWA as projects requiring Federal assistance that are estimated to cost over $500 million or more. The purpose of a CSRA is to identify potential cost and schedule risks, evaluate the probability of each risk occurrence, and identify the potential cost and/or schedule delays if the risk occurs. A CSRA is an intensive analysis by discipline as to the potential project risks. Generally, these assessments are more costly and use more staff time to perform than a typical risk assessment.

For projects estimated to cost less than $500 million, Alternative Delivery does perform a risk assessment, but the Agency lacks guidelines to tie the complexity or level of effort for the risk assessment to the project's potential risk or impact to the Agency.

Recommendation:
We recommend that SCDOT develop and follow risk assessment guidelines for projects that exhibit significant risk and have a total project cost of less than $500M.

Management Action Plan (MAP) 6.2	
The Office of Alternative Delivery will expand Section 3.4 Risk Matrix of the existing Design-Build Procurement Manual to further clarify the following. • At what time in project delivery should a certain type of risk assessment be performed; • What type of risk assessment should be performed, i.e. CSRA; • The key stakeholders review the risk profile for all projects and identify projects that exhibit significant risks. • How will identified risks be monitored during project delivery;	
MAP Owner:	Preconstruction Alternative Delivery Engineer
Division:	Office of Alternative Delivery
Scheduled Date:	March 31, 2023

Performance Opportunity

While our engagement was focused primarily on issue escalation and resolution along with risk management, we identified a matter that represents an opportunity for improving performance.

Performance Opportunity 6.3
Development of Contract Administration in Alternative Delivery

Division: Alternative Delivery

Process Affected: (See process descriptions in Appendix A on page referenced below)
Process 4 – Design-Build Contract Administration

Observation:
IAS notes that the Design-Build contract administration is more complex than administering SCDOT's standard contract. Currently, there are opportunities for training within Alternative Delivery in the form of symposiums and certifications. However, a formalized training process is not in place for employees managing Design-Build contracts.

IAS does note that Alternative Delivery has only recently assumed the responsibility of contract administration on future Design-Build projects. Based on the recent restructuring of responsibilities, certain facets of the Alternative Delivery program are not yet in place.

Recommendation 1:
Alternative Delivery should refine document management standards based on the restructuring for the contract administration of its projects and communicate the standards to employees that administer Design-Build projects. This would serve to provide efficiencies to Alternative Delivery and its stakeholders in improved collaboration, faster document retrieval, and standardized workflows for projects.

Recommendation 2:
Develop a process to formalize the updates of the Design-Build Procurement Manual on a regular basis.

Recommendation 3:
As SCDOT is shifting the responsibility for the administration of projects under Alternative Delivery, SCDOT should focus on training internal employees, field staff, and key stakeholders so that they may become acclimated to the policies, procedures, and updated practices of Alternative Delivery.

Management Action Plan (MAP) 6.3A

Currently, two folder structures, one for projects in development and one for construction contract administration, exist within ProjectWise, which is one of SCDOT's document management systems. After organizational restructuring, the Office of Alternative Delivery now oversees the

development of statewide design-build projects and the administration of design-build construction contracts. The Office of Alternative Delivery will develop a streamlined process that incorporates both folder structures into the delivery of design-build projects. We will also develop document management standards and guidelines so that this refined folder structure can be successfully utilized.	
MAP Owner:	Preconstruction Alternative Delivery Engineer
Division:	Office of Alternative Delivery
Scheduled Date:	March 31, 2023
Management Action Plan (MAP) 6.3B	
The Office of Alternative Delivery will develop a routine process for updating the manual when revisions or addendums are necessary. This will include obtaining input from the key stakeholders as well as FHWA when making revisions or addendums.	
MAP Owner:	Preconstruction Alternative Delivery Engineer
Division:	Office of Alternative Delivery
Scheduled Date:	March 31, 2023
Management Action Plan (MAP) 6.3C	
The Office of Alternative Delivery currently facilitates Design-Build Symposiums on a quarterly and annual basis with the quarterly meetings consisting of a small group and the annual meeting consisting of all SCDOT employees who participate in the delivery of design-build projects and those who are also DBIA certified. The Office of Alternative Delivery will expand the quarterly meetings to include all personnel fully dedicated to the delivery of design-build projects. The Office of Alternative Delivery will also develop and implement an alternative delivery orientation, which will be performed on an annual basis for those new employees to alternative delivery, i.e. design-build. In addition, the Legal office will develop a design-build agreement user manual along with trainings to review design-build contract case studies.	
MAP Owner:	Director of Alternative Delivery
Division:	Office of Alternative Delivery
Scheduled Date:	March 31, 2023

Process Descriptions (Appendix A)

Process 1 – Project Selection

To determine whether a project is a suitable candidate for design-build delivery, SCDOT will conduct a review of the project's key goals, attributes, and constraints, as well as an assessment of the project's development status and project risks using resources across the Agency, depending on project attributes.

Process 2 – Project Development

For design-build projects, the planning, concept development, and environmental process activities generally follow the traditional design-bid-build process as described in the Project Development Process. The preliminary engineering aspects for design-build projects typically stop at preliminary design; however, the amount of design developed may vary from project to project.

The preliminary engineering is performed to sufficient detail to complete the National Environmental Policy Act (NEPA) process and to insure the project can be built within the proposed limits, schedule, and cost estimate; however, progressing preliminary engineering too far potentially limits the innovation of Design-Build Teams and may add risk to SCDOT. The project manager (PM) will collaborate with all affected SCDOT offices during the identification of risks, development of mitigation strategies, and the overall development of the RFP for a design-build project. For projects whose total project cost exceeds $500 million, the following three items are required by the Federal Highway Administration (FHWA):

1. Cost Estimate Review, which can also include a CSRA
2. Project Management Plan
3. Initial Financial Plan

With the assistance of a contracted risk manager, risks are compiled for each discipline, escalation, market conditions, etc. Each risk is identified, assigned an owner, and assigned a probability and severity.

Process 3 – Procurement

During this phase, SCDOT will form an Evaluation Committee of which the size and makeup will depend on project requirements. Procurements will follow either a two-phase or one-phase selection procedure.

The two-phase selection procedure will involve SCDOT advertising a Request for Qualifications (RFQ) and requires a Statement of Qualifications to be submitted from interested Design-Build teams. The Evaluation Committee will shortlist the most qualified teams to participate in the Request for Proposal (RFP) Phase.

A one-phase selection procedure includes the consideration of qualifications and technical proposals in a single phase of advertising. In determining if a one-phase selection procedure is suitable, the PM will consider the industry's interest in the project, clearly defined project requirements, and will also verify that the scope of work does not warrant Design-Build teams with special skills or specific types of experience among other reasons.

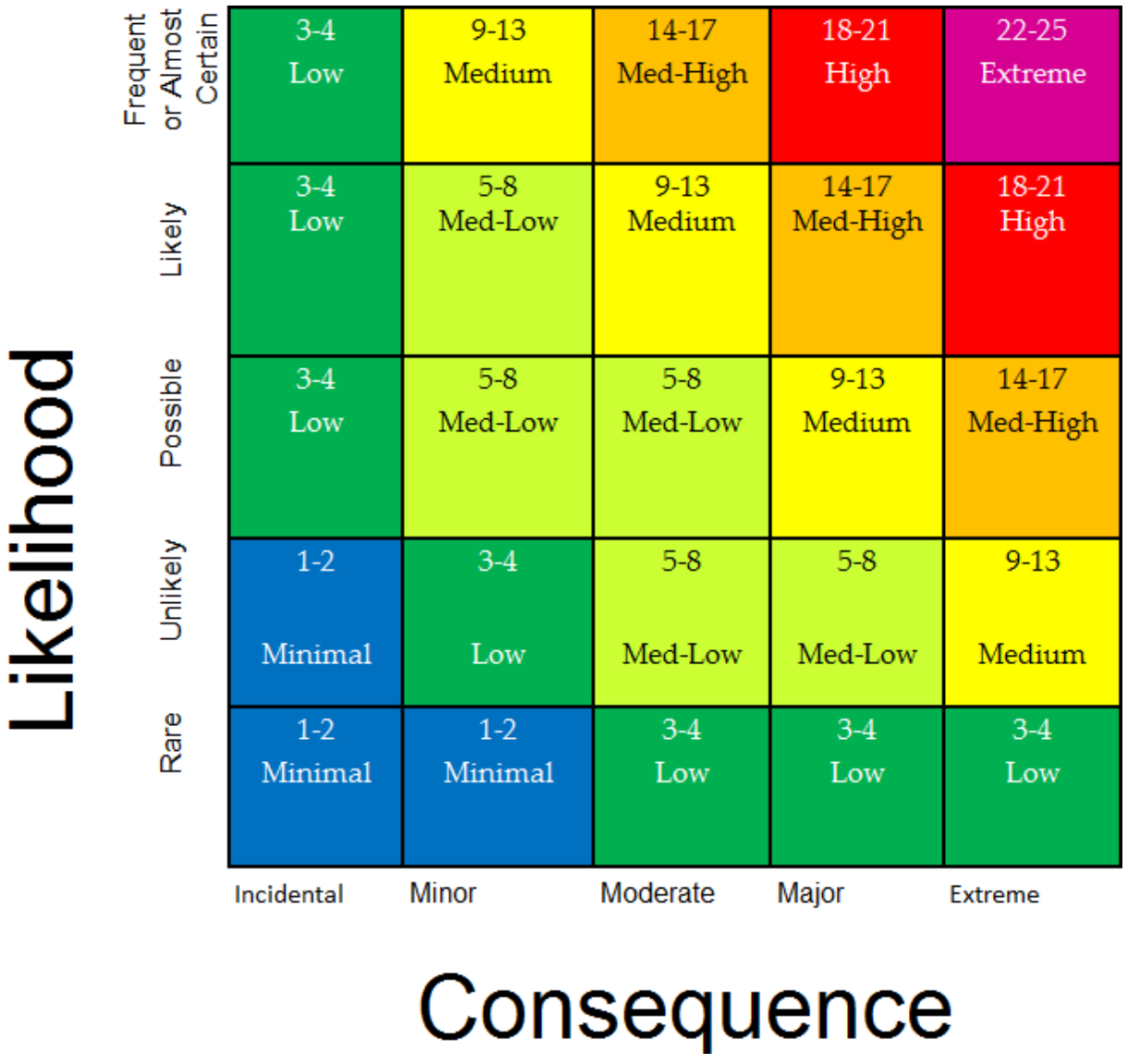
The Agency will review and determine the award based on pre-defined award criteria. Upon approval by the Secretary of Transportation, SCDOT will send the Notice of Award letter to the successful Design-Build team. SCDOT will then executive a contract with the successful Design-Build contractor.

Process 4 – Design-Build Contract Administration

Within 45 days of contract execution, SCDOT will issue a Notice to Proceed to the contractor. During this time the contractor must submit to SCDOT for review and approval its Baseline CPM Schedule, Design Submittal Schedule, and various other administrative plans (i.e. health safety plan, right of way activity plan, QC plan, and others) which will guide the prosecution of work toward substantial and final completion. Failure to follow these plans can result in stop work orders, withholding of progress payments, or require other remedies such as recovery plans. The contractor is responsible to notify SCDOT of any issues or potential claims within the time frames defined in the contract documents. Once a project has reached substantial completion, the Agency and Contractor will jointly generate a punch list. Once this punch list items are complete, the project will be deemed to have reached final completion. Final completion will start the contractual required warranty period. SCDOT will not make final payment before a project reaches final completion.

Risk Scoring Matrix (Appendix B)

Risk significance is rated on a scale of 1 (lowest) to 25 (highest) and is the product of the risk consequence score (1 to 5) multiplied by the risk likelihood score (1 to 5). The following matrix provides a color scale corresponding to risk significance scores.



Risk Appetite (Appendix C)

Risk appetite is defined as the amount of risk the Agency is willing to accept in the pursuit of its objectives. Management's goal is to manage risks to within the appetite where mitigation is cost- beneficial and practical. Management has set the Agency's risk appetite by risk type using scoring methodology consistent with the Risk Scoring Matrix shown in Appendix B. Risk appetites by risk type are as follows:

RISK TYPE	EXAMPLES	RISK APPETITE SCORE 1 = Minimal Risk 25 = Extreme Risk (See Scoring Matrix in Appendix B)
Safety	Employee and Public Well-Being	2
Ethical	Fraud, Abuse, Mismanagement, Conflict of Interest	2
Financial	Funding, Liquidity, Credit, Reporting	4
Strategic	Resources not Aligned, Unclear Objectives	4
Reputational	Unintentional Unwanted Headlines	4
Operational	Delays, Cost Overruns, Waste, Inefficiency	6
Regulatory	Non-Compliance	6
Legal	Lawsuits	10