Project Risk Management Plan (Part 1&2)

Group 5

Sarvesh Malik, Meet Patel, Aabhas Maru, Geyo Jacob

College of Professional Studies

Northeastern University

PMJ6015: Project Risk Management

Prof. James Hannon

June 19, 2022

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Group 5	06/10/2022	James Hannon	06/10/2022	Initial Risk Management Plan draft
2.0	Group 5	06/16/2022	James Hannon	06/16/2022	Risk Management Plan

TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 Purpose Of The Risk Management Plan 1

1.2 The Project Background 2

1.3 The Parent Organization Background 3

1.4 The Project Organization Structure 4

2 RISK MANAGEMENT PROCEDURE 5

2.1 Process 5

2.2 Risk Identification 5

2.3 Risk Analysis 6

2.3.1 Qualitative Risk Analysis 7

2.3.2 Quantitative Risk Analysis 12

2.4 Risk Response Planning 15

2.5 Risk Response Implementation 15

2.6 Risk Monitoring, Controlling, And Reporting 16

3 ROLES AND RESPONSIBILITIES 17

4 BUDGETING 19

5 TIMING 21

6 RISK BREAKDOWN STRUCTURE/ CATEGORIES 22

7 STAKEHOLDER RISK TOLERANCE..... 24

RISK MANAGEMENT PLAN APPROVAL 26

APPENDIX A: REFERENCES.....27

APPENDIX B: KEY TERMS..... 28

1 INTRODUCTION

1.1 PURPOSE OF THE RISK MANAGEMENT PLAN

A risk is an event or circumstance that, if it occurs, could have a positive or negative influence on a project's goals. Risk management is the process of identifying, assessing, responding to, monitoring and reporting hazards. This Risk Management Plan, which is part of the Nava Bharat Energy India Limited (NBEIL) project, explains how those risks will be identified, analyzed, and managed. The plan includes templates and techniques for documenting and prioritizing risks, as well as for instructions for performing, recording, and monitoring risk management throughout the project's lifecycle. The project manager and team construct a risk management plan during the planning phase, which is monitored throughout the project.

Project risk management plan (RMP): Specifies how the firm's and sponsor's rules, standards, procedures, and directions will be executed from the start of the project to ensure that a project and organization achieve their goals. (PMI, 186, 2021).

Those two plants should be created in accordance with the project risk plan's methods, standards, tools, methodologies, and agreements. The planning, building, and installation phases for these two plants should all be completed. We will use the rules and patterns presented in Kenneth Rose's book Project Risk Management: Why, What, and How (PMBOK 7th edition,150, 2021) and the PMBOK offered by the PMI to attain a better level of project risk management.

1.2 THE PROJECT BACKGROUND

Nava Bharat, a ferroalloy company founded in 1972, is today a multinational corporation with operations in India, Southeast Asia, and Africa. We also work in mining, power, agribusiness, and healthcare, in addition to metal fabrication.

The NBVL was created by two Sub company alumni, a Rao and a Panda. Nava Bharat Energy India Limited (NBEIL) filed an application in Andhra Pradesh for the construction of coal-fired power plants, One at Paloncha, Khammam district, and the other in Dharmavaram, East Godavari district on June 30, 2009.

Designation	Name
Chairman	Ashok Devineni
Managing Director of NBVL	Trivikrama Prasad
Finance Director; Corporate Affairs Director	Rama Krishna Prasad

In proportion to the demand for electricity, the Polancha and Dhamavaram power plants should boost the supply of energy from 0.97 million to 1.91 million units.

- Each coal power plant should be capable of producing 15 megawatts.
- To promote the use of coal technologies while reducing pollution levels in the environment.
- 300 people are employed directly, and 700 people are employed indirectly.

- Take the necessary environmental precautions and promote waste management in compliance with government rules.
- Increased energy supply by 30% to offset the negative effects of energy cuts in the region.

1.3 THE PARENT ORGANIZATION BACKGROUND

- Nava Bharat Ventures Limited is the parent company. Subba Rao Devineni and Punnaiah Panda established a company.
- NBVL (Nava Bharat Ferro Alloys Limited), a subsidiary of Nava Bharat Realty Limited, Brahman Infratech Private Limited, and Nava Bharat Private Limited (Singapore), Kinnera Power Company Limited, was established in November 1972 to manufacture ferroalloys.
- Since June 30, 2009, these organizations' activities have primarily concentrated on trading and investing. NBVL imports magnesium alloys from China in addition to exporting them to North America, Japan, and Europe
- In 1997, NBVL built a captive power plant in Paloncha, Andhra Pradesh, with a capacity of 50 megawatts. (MW).
- In Orissa, the company built a 30-megawatt power plant (MW). The overall capacity of these two reactors was boosted to 301 MW to fulfill NBVL's expanding electricity needs.
- NBVL has profited from a financial connection with Development Bank Limited from the organization's financial assistance in the past when building its industrial units, particularly its energy projects.

- NBVL was able to effectively complete all of them after gaining competence in the execution of small power projects.

1.4 THE PARENT ORGANIZATION RISK ATTITUDE

Nava Bharat Ventures Limited can be regarded as a risk seeker. They aim to maximize the value of their investments, while staying focused on the company's mission to provide energy at the lowest cost to residential, commercial, and industrial customers in India.

1.5 THE PROJECT ORGANIZATION STRUCTURE

2 RISK MANAGEMENT PROCEDURE

2.1 PROCESS

The RMP (Risk Management Plan) is a report that project teams use to evaluate possible hazards/risks, determine the implications and the possibility of them occurring, and then devise a plan of action. Risk management is divided into five stages that must be accomplished in order to effectively manage risks. It starts with identifying hazards, which is followed by analyzing, prioritizing, implementing a remedy, and ultimately monitoring the risk. Each stage of the manual technique necessitates a plethora of information and administration.

2.2 RISK IDENTIFICATION

The aim is to determine risk levels for the project's procurement and implementation phases.

The project team will assess the project's scope, budget, timeline, operational strength of character, major performance factors, performance problems, regulatory requirements, internal and external interdependences, and main performance parameters for risk detection, as well as technological difficulties, incorporation, interconnectivity, maintainability, supply-chain security breaches, danger handling capabilities, expense variance analysis, evaluation event aspirations,

and main performance variables for risk detection. Furthermore, earlier input data, stakeholder interviews, and hazard lists provide useful information about risk categories to analyze.

A risk register documentation will be used to list all of the risks and risk management techniques. This documentation will outline all possible risks that the enterprise may face throughout development, legal documentation, and task assignment within the executive team, and also risk measures that can be used to reduce such risks.

2.3 RISK ANALYSIS

This method has the benefit of assessing project risks and giving additional quantitative risk data to enhance risk strategic planning (PMI, 2017). Hazards can be beneficial or harmful. The following negative hazards were identified:

- Contract processing delays
- The bank's cash transactions are delayed.
- Construction-related issues, including such raw transportation of materials.

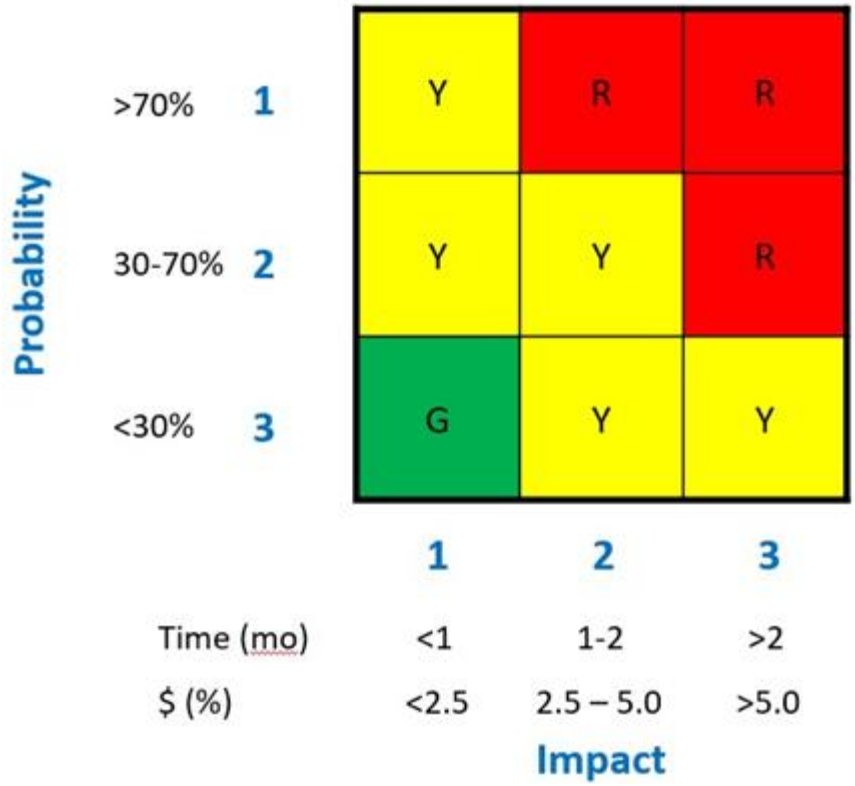
Shares are volatile, particularly in sectors that rely on revenues. Such power stations can be utilized to power other towns in the area because they seek to deliver a huge amount of electricity. This could lead to higher stock values, which would be useful for the company.

Risk research will be provided in two ways: qualitative and quantitative. All of the documents in the risk register will be examined using both risk formats, with the results being entered in the assessment process.

2.3.1 Qualitative Risk Analysis

Risk assessment utilizing qualitative risk analysis entails assessing the likelihood and impact of hazards, as well as assigning a nominal risk identified in the form of red, yellow, and green for easy detection of high-risk situations. As shown in the diagram below, a probability/impact matrix will be utilized to qualitatively examine hazards. The terminology used will also be defined in the diagram below.

INDEX	**(1) LOW RISK**	**(2) MEDIUM**	**(3) HIGH RISK**
Probability (% chance of occurring)	< 30%	30 - 70%	> 70%
Time (Change in project duration)	< 1 month	1 - 2 months	> 2 months
(% variance in spend from baseline)	< 2.5%	2.5 - 5.0 %	> 5.0 %



In the Probability/Impact matrix, the risk analysis' likelihood and impact (in time and dollars) will be represented.

Although expert opinion will be used in the risk analysis, the Probability/Impact Matrix presented above will be the primary technique of qualitative analysis. As a result, a risk expert (s) with experience in power plant building will be engaged, and the outcomes of this consultation will feed into the risk analysis.

For any risk that obtains a red or yellow rating, a risk response strategy will be developed. Section 2.4 details the risk response plan, which should include risk reduction steps and rationale for accepting the risk. Qualitative risk analysis must be performed on a regular basis and whenever new information that could affect the risk indices becomes available.

ID	Risk Desription	Probability	Impact	Reason

1	Financial institutions are reluctant to lend 70% of the project's total cost.	High	High	Lenders' preference for renewable energy sources and ecologically friendly initiatives contributes to their hesitation to invest in the project.
2	Inability to get commitments for the full amount of term loans required	High	High	Due to India's weak market circumstances and the significant leverage of the projects, the company may be unable to get commitments.
3	Inability to acquire	High	Medium	Although sufficient

	pollution control clearances			environmental protection measures have been recommended, obtaining two sets of permission from the state pollution control and the ministry may prove difficult for both power plants.
4	Inability of modern technology to reduce carbon emissions	Medium	Medium	If carbon emissions are not regulated, regulatory agencies may put the building of both power stations on hold.
5	Delay in the importing of	Medium	Medium	Complications on the port, road, or

	coal, which would be used to power the project initiatives			rail transportation networks could cause delays in coal imports, causing the project to be delayed.
6	Project implementation is being pushed back.	Low	Low	Implementation of the project may not go according to plan, causing a time overrun.
7	Unfinalized agreements cause cost overruns.	High	High	The building of both power plants will be done through package contracts, and any unresolved issues could result in budget overruns.
8	Inadequate fuel supply for the	High	High	Although Indonesia has

	Dharmavaram power plant			granted coal mining rights, the amount of coal extracted may be insufficient to meet the needs of the Dharmavaram plant.
9	Delay in receiving assembled parts	Medium	Medium	Delays in the arrival of assembled pieces may lengthen project's duration.

2.3.2 Quantitative Risk Analysis

Quantitative Risk Analysis refers to the process that numerically calculating the aggregate impact of recognized individual project risks and other sources of uncertainty on overall project goals (PMI, 2017) For this project, the project team evaluates risk value using expected monetary value (EMV) in the quantitative analysis.

Quantitative risk analysis will be performed for each risk that falls into the red category from of the qualitative risk analysis on the Probability/Impact Matrix, and numeric values will be assigned to those risks. The notion of Expected Monetary Value (EMV) will be used in quantitative risk

analysis, where the likelihood of a risk state will be combined with the cost risk occurrence, culminating in a numeric value for hazard. The EMV for risk index is calculated as follows.

P1 x CI1 = EMV1 in Risk 1 State A

P2 x CI2 = EMV2 in Risk 1 State B

EVM (total) = EVM1 + EVM2

Where, P = Probability of Risk State (%),

CI = Cost of Impact ($),

the sum of the probabilities equals 100 percent.

Then, the total EMV is calculated by adding each of the EMV to the project cost. A risk probability and impact formula can assist in determining their importance and priority. Any project that has a EMV that is higher than 0 is deemed to be worthwhile. The average result which may or may not happen soon is evaluated using the Expected Monetary Value (EMV) method. Through analysis and computation, it provides as the budget contingency reserves.

Calculating the EMV of two branching paths of options and selecting the most advantageous result, such as deciding which type of boiler to purchase, is an example of how the aforementioned formula could be used.

When risks with a major impact on project scope, time, or cost are identified, a Monte Carlo simulation will be undertaken. The Monte Carlo simulation will be used to build a distribution curve that shows the impact and cumulative probability results.

ID	Risk Desription	Probability (%)
1	Financial institutions are reluctant to lend 70% of the project's total cost.	85%
2	Inability to get commitments for the full amount of term loans required	80%
3	Inability to acquire pollution control clearances	75%
4	Inability of modern technology to reduce carbon emissions	50%
5	Delay in the importing of coal, which would be used to power the project initiatives	45%
6	Project implementation is being pushed back.	75%
7	Unfinalized agreements cause cost overruns.	85%
8	Inadequate fuel supply for the Dharmavaram power plant	65%
9	Delay in receiving assembled parts	45%

2.4 RISK RESPONSE PLANNING

The practice of evaluating options and choosing activities to improve incomes and minimize hazards to the project's goals is referred to as risk response planning. It necessitates establishing who is accountable for each appropriate risk response and assigning accountability to individuals or groups. This strategy guarantees that the possible risks are addressed properly. The success of response planning will affect whether or not increases or reduces the project's risk.

Risk response planning has to be proportional to the level of risks, budget in addressing the issue, quick to remain effective, practical inside the work context, consented to by all parties concerned and managed by a relevant authority. Choosing the appropriate response plan from a variety of possibilities is typically required.

2.5 RISK RESPONSE IMPLEMENTATION

The Implement Risk Responses step is where you take your preparedness strategies and put them into implementation. Risk response plans must be implemented because talking about a possible issue is just not enough to have it addressed.

The techniques and methods you choose will be heavily influenced by the type of project you're working on. The application of the 'acceptance' strategy is clearly distinct from going all-out to alleviate the problem with a major action plan.

However, the tools and tactics you can employ in this situation share certain common elements, such as:

- Expert advice

- It will be primarily your responsibility to ensure that the work is performed using communication and group skills, particularly persuasion.
- Project management information system

This technique yielded the following results:

- Requests for modifications
- Updates to project records, especially the issue log, learned lessons registers, team assignments, risk log/register, and risk reports.

2.6 RISK MONITORING, CONTROLLING AND REPORTING

Controlling and monitoring risks ensures that risk management rules and procedures are properly understood and carefully implemented. The procedure can be used to see if:

- The outcome was as anticipated as a consequence of the therapy measures done.
- All the data on risk management processes were accurate.
- Better data was obtained, that was then used to evaluate what lessons could be learned for future risk management and monitoring.

Communicating with stakeholders via project risk reports could be a key aspect in implementing strategy and achieving project outcomes that satisfy requirements. Communication & reporting actually help managers, developers, and clients understand current risks, options, and trade-offs.

A risk report summarizes project risks and possibilities, and the present state of identified risk and risk occurrences patterns. Project risk reports typically include the following components:

- The risk register and the associated risk mitigation plan of action
- Analyzing job performance reports
- The project's timeline is moving forward.

- Project deliverables production plan

3 Roles and responsibilities

Roles	Responsibilities
Executive Director and Board of Directors	Review the tasks. Review the risks. Review and approve risk strategies. Review areas of potential risk Monitor and Support risk.
Chief Operating Officer	Prioritize risks. Review and revise risk management strategies.
Project Manager	Suggest appropriate risk management strategies. Manage project risk register. Identify potential risks. Coordinate risk assessment. Coordinate risk implementation strategies.
Billing Manager	Implementing the RMP (risk management plan). Analyze the occurrence of a risk. Develop a written risk plan.
Front Office Manager	Report project risks to the project manager. Actively cooperate with the project details.

	Maintain documentation on the project.
On-site Physician	Communicate with the team leader. Ensure availability of medical supplies. Maintain worker medical records.
Project Team	Analyze risks. Communicate with the project manager about the risk implementation strategies in place.
Accounting Team	Analyze financial risks. Communicate with the project manager. Keep track of financial records.
Functional Managers	Manage resources in areas including IT, infrastructure, utilities, HR, accounting, and legal. The project's resources are released. Individuals from that functional department who are engaged on the project are directed in their technical work.

4 Budgeting

All operations linked with risk management processes will be carried out using low-cost technologies and approaches to ensure strategic budget allocation, given that the total cost of constructing both power plants is in the tens of billions of rupees.

The identification of risks will be carried out through brainstorming sessions by the PM, PMO, project team, and other relevant clients/stakeholders. This approach is cost-effective as a sum of 20,000 rupees will be budgeted.

The qualitative risk analysis is a more involved process, thus risk experts with experience in power plant building will be engaged, with a budget of 60,000 rupees set up for these consultations.

The sum of 260,000 will be budgeted for the quantitative analysis of risks. A contingency reserve of 2,000,000 rupees will be set aside for the mitigation of high-level risks only and an additional 60,000 for the monitoring and control process.

All additional risk management processes will be budgeted at $160,000 each. The cost of risk work will be budgeted at 2,500,000 rupees, which is 0.02 percent of the expected overall cost of the project.

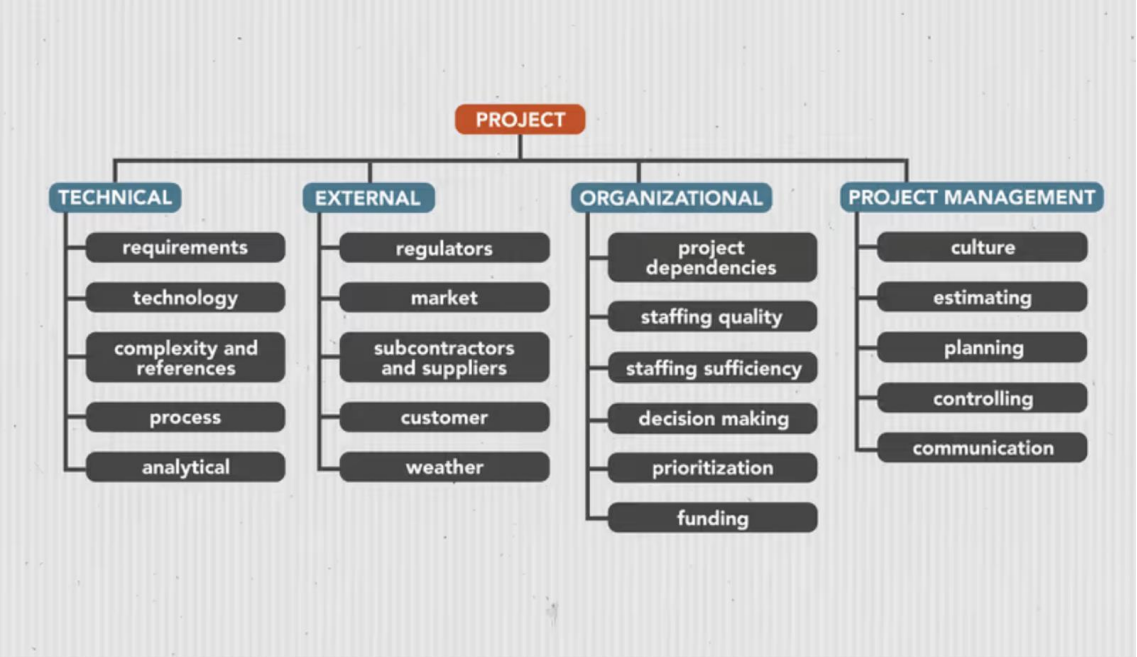
Process	**Cost (Rupees)**
Identification of risks (Brainstorming)	20,000
Qualitative analysis (Consultation of SMEs)	60,000
Quantitative analysis	200,000
Quantitative analysis (consultation of data analysts)	60,000
Mitigation (High level risks)	2,000,000
Other processes	160,000
Total	2,500,000

5 Timing

Throughout the project, the PM (project manager) will assess all the risks listed in the risk register. This Register and Risk Management Plan will be reviewed twice a month on a regular basis. As part of the risk assessment approach, the paperwork will be amended as needed. Every Wednesday, the top five risks will be assessed. Weekly meetings will be held in order to identify new risks as soon as possible. Every month, there will be a meeting with all of the stakeholders. To eliminate misunderstanding, old risks that no longer exist will be removed from the risk register. To facilitate successful risk reduction, risk monitoring will be included in code reviews, risk review committee meetings, and periodic program reviews. The risk tracking reports will include the Risk Reporting Matrix, as well as traditional probability and consequence assessment parameters. The paperwork will cover all objectives and statistics for the Project Manager and choice authorities. Through the documentation, management will obtain the required information to make quick and effective decisions.

6 Risk Breakdown structure/ categories

RBS stands for risk breakdown structure and is a structured diagram that organizes project hazards into sub-levels., starting with the highest-level categories and moving down. In the meanwhile, the risk breakdown structure, like the WBS, offers a framework for identifying and analyzing the risks that each project involves, making it much easier for project leaders to prepare for and reduce their implications. Below is an example that we can use:



(Source: Fool.com)

In this sample risk breakdown structure, All hazards are divided into four categories by the project manager: technically, organizational, external, and project management. Each major category contains a number of specific subcategories. According to our risk register, we can match different risks to different branches, so that we can understand each risk more clearly and accurately. The table below shows the risks encountered in this project and their corresponding categories.

Risks	**Category**
Financial commitments	Organizational-Funding
Approvals for pollution control	Project Management-Controlling
Arrival of assembled parts	Technical-Process
Importation of coal	External-subcontractors and suppliers
Carbon emissions control	External-Regulators
Unfinalized agreements	Organizational-Decision Making
Availability of sufficient land mass	Project Management-Planning
Residential and commercial institutions	External-Regulators
Mechanical and electrical breakdown	Engineering
Extraction of insufficient fuel	External subcontractors
Community support	External-Market
Unsafe working conditions	Organizational-Safety Management
Weather conditions for construction	External-Weather
Variability of fuel cost	Project Management-Planning
Use of cheap technological parts	Technical-Requirement

Utility Relocation	Organizational-Utility Management
Grantee Administrative Costs	Project Management-Cost Management

7. Stakeholder Risk Tolerance

Regardless of whether the project is being implemented by external vendors or website users, the risk tolerance will be determined by the stakes involved for each stakeholder. Considering the magnitude of each stakeholder's contribution and the importance of their role, the risk tolerance will be determined. A good example is the risk tolerance for the vendor. Comparatively speaking, there would be less compared to those who are not in a hurry to create a website as soon as possible. Tolerating project and stakeholder risk mean:

This project will accept risks up to 5% of the project budget, regardless of stakeholder.

Stakeholders cannot refuse to accept risks for this project that amount to 5% of the total cost of the project. This will be considered as the threshold even if the total EMV duration is greater.

Concerns with the critical path tasks will affect the launch of the product, so stakeholder tolerance will be lower.

Within the external vendor relationship, stakeholder tolerance will be lower as well.

The risks related to the internal team, alumni representatives, or the upkeep of the website will be tolerated at a medium level because they may not inflict drastic consequences on the project.

The project will demonstrate a high level of acceptance and compassion for the stakeholders, considering the hectic schedules of the client, SME, and advisory representatives. Acknowledging their delays will actually benefit the project as their input is crucial to its success.

8. RISK MANAGEMENT PLAN APPROVAL

The undersigned acknowledge they have reviewed the **Risk Management Plan** for the **Nava Bharat Energy Solutions** project. Changes to this Risk Management Plan will be coordinated with and approved by the undersigned or their designated representatives.

Signature:	Sarvesh Malik	Date:	06/16/2022
Print Name:			
Title:			
Role:			

Signature:	Meet Patel	Date:	06/16/2022
Print Name:			
Title:			
Role:			

Signature:	Geyo Jacob	Date:	06/16/2022
Print Name:			
Title:			
Role:			

Signature:	Aabhas Maru	Date:	06/16/2022
Print Name:			
Title:			
Role:			

APPENDIX A: REFERENCES

The following table summarizes the documents referenced in this document.

Document Name and Version	**Description**	**Location**
NAVA BHARAT (2012).	NAVA BHARAT VENTURES LIMITED 40th annual report 2011-2012.	http://keic.mica-apps.net/wwwisis/ET_Annual_Reports/Nava_Bharat_Ventures_Ltd/NAVA-BHAR-2011-2012.pdf
A Beginner's Guide to Risk Breakdown Structure	Managing risk is an essential part of project strategy in managing projects.	https://www.fool.com/the-blueprint/risk-breakdown-structure/
The standard for risk management in portfolios, programs, and projects.	Project Management Institute. (2019). The standard for risk management in portfolios, programs, and projects.	Project Management Institute.

APPENDIX B: KEY TERMS

The following table provides definitions for terms relevant to the Risk Management Plan.

Term	Definition
[Insert Term]	*[Provide definition of the term used in this document.]*
[Insert Term]	*[Provide definition of the term used in this document.]*
[Insert Term]	*[Provide definition of the term used in this document.]*