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Part A Project proposal poster

THE REBUILDING OF HIGHWAY 5

Transport passage with a toll implementation



PROJECT OVERVIEW

The primary objective is to restore Highway 5, which went through critical structural damage during the 2022 British Columbia floods (Government of British Columbia, 2022). To maintain long-term efficient preservation, a toll system will be introduced to support the goals of this project.

OBJECTIVES

- Repair damage on the high-way
- Consult investors and local council communicating the risks and benefits
- Introduce toll system to public and thoroughly explain the sustainability factors to avoid backlash
- Maintain reliability and take into account general feedback

OFFERED SOLUTION

1. Rebuild the affected areas of Highway 5 with flood-resistant materials incorporating up to date engineering standards.
2. Reduce costs by using an online toll payment system similar to the Dartford Crossing. Vehicles using the highway will be detected by accurate automatic number-plate recognition systems similar to Onishchenko, Liubchenko and Podorozhniak (2023).
3. Toll exemptions will be put in place for local residents and school transport buses to support local community
4. Secure a dedicated fund with the purpose of maintaining the highway to a high standard (Kim, 2022)

TIMELINE PLAN

Planning Stage
Jan -Feb 2026

Design Stage
Mar - May 2026

Sourcing Stage
Jun - July 2026

Construction Stage
Sept- Feb 2026

WORK STRUCTURE BREAK DOWN

Stage	Action
Plan	• Consulting • Permits • Public surveys • Risk analysis • Stakeholder analysis
Create	• Ideas and plans regarding the structure and toll system
Securing	• Hire contractors • Source needed materials
Development	• Repair damages • Toll system set up
Assesing	• Testing plate recognition systems • Weight testing

RISKS AND BENEFITS

- Negative criticism by public
- Technical failures
- Legal challenges
- Privacy concerns

- New job opportunities
- Increase in public safety
- Restoration of a link which unites communities
- Quick to set up
- Faster traffic flow

STAKEHOLDER LIST

- Contractors and engineers
- Local council
- Local residents
- Head of transportation
- Canadian government

INITIAL COST

Estimated start-up cost :\$120 - \$170 Million

Roughly around \$1.1 Million maintenance per month

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Part B Reflections from the feedback received from tutor and peers

Based on the input of my teacher, I could clearly see which parts of the project worked well and where changes had to be made. The feedback from my peers and tutors was mostly positive and indicated the presence of all main components necessary for a good project management plan – objectives, Work Breakdown Structure (WBS), stakeholders' identification, risk assessment, benefits, and approximate cost estimates. This showed that I am familiar with the fundamentals of the subject and can apply them successfully while working at the early stages of the project development.

In addition, one of the main features of my project is the organization of information and logical approach. By incorporating the main elements required for project management I managed to structure the information presented in a logical way. The use of WBS has allowed me to break down my project into several smaller tasks and, thus, develop a more comprehensible plan. The timely identification of stakeholders and possible risks is also one of the main characteristics of this project.

At the same time, there is still room for improvement. For instance, I need to focus on creating more effective stakeholder engagement strategies. While the identification of key stakeholders was done quite successfully, their influence and role in the project have not been analyzed properly. Based on the feedback received, I incorporated such techniques as Mendelow's Matrix, RACI matrix, and a good communication strategy to develop an efficient plan. In addition, I was told about the importance of effective communication with stakeholders. I did that in my final paper.

Finally, the issue of expenses and budget was also mentioned when analysing the initial project. It is important to remember that initial cost estimates should correspond to the project budget and remain realistic. After receiving the feedback, I reviewed this part of my project and added additional costs and expenses associated with specific activities. Thus, it became clear how expenses are distributed throughout different stages of project completion. I have always paid attention to this important part as proper planning requires taking into account the key factors of the project.

All three aspects are connected to each other and need to be balanced. As a result, I developed a more achievable project plan. This was achieved due to the consideration of time, cost, and scope as main factors that affect the success of the project.

Overall, the feedback proved to be extremely helpful. It has helped me progress from an outline to a more thorough analysis. Incorporation of recommended improvements has led to better results.

Part C Project Management Plan

1. Introduction

Resilience is an aspect that has become increasingly important considering the increasing frequency and seriousness of weather events. Flooding is one of those disturbances that pose a serious danger to transportation infrastructure leading to cost issues, threats, and infrastructure damages. The damage experienced in the Highway 5 has demonstrated the susceptibility of transportation infrastructure to environmental challenges (British Columbia, 2022). In this case, this project management plan focuses on the development of a plan for restoring the highway and ensuring sustainable and resilient future through the introduction of improvements and financial arrangements for the maintenance process. The aim of this project is to restore the highway with regard to making it resilient by using improved engineering designs and generating the source of funding from the implementation of a toll. Key aspects of project management, such as scope planning, stakeholders' involvement, resources, and risks are necessary components for carrying out infrastructure projects (Kerzner, 2017).

2. Project Description

The project focuses on the reconstruction of Highway 5 after severe flood damage. According to the project documents, the highway is considered crucial as it is an important transport route connecting communities and ensuring economic growth. The problem caused disruptions to the supply chain, transportation, and business operations.

The main aim of the project is the restoration of the highway and its reinforcement in order to increase resistance to potential future flooding through modern building technology. The toll system will generate additional funds, for maintenance and infrastructure development. This principle reflects the principles of sustainable infrastructure management because user charges decrease the dependence on public budgets (Kim, 2024).

Automatic number plate recognition (ANPR) technology will improve tolling efficiency and reduce traffic jams; the use of such technology has been proven earlier in the research on intelligent transport systems (Onishchenko, Liubchenko and Podorozhniak, 2023).

Objectives:

- Rebuilding of the highway infrastructure.
- Enhancing resistance to environmental threats.
- Improvement of efficiency and safety in the transportation system.
- Provision of sustainable funding methods.
- Meeting the expectation of key stakeholders.

This project is associated with other projects aimed at rebuilding infrastructure after floods with an emphasis on sustainability.

3. Scope Definition

A proper definition of the scope of the project will eliminate any confusion and ensure maximum effectiveness of resource utilization. As per Project Management Institute (PMI), a well-defined scope will prevent scope creep and help ensure the commonality of purpose among all stakeholders involved (Abramovici, 2019).

In Scope:

- Rehabilitation of damaged parts of Highway 5.
- Utilization of flood resistant materials and adherence to modern engineering standards.
- Construction of toll collection system.
- The implementation of Automatic Number Plate Recognition technology.

-

- Communication with stakeholders and testing of results.

Out of Scope

- Construction of entirely new transportation networks.
- Continuous operations management after initial development.
- Development of adjacent infrastructure not damaged by the floods.

Defining the scope boundary will ensure that there is constant emphasis placed on achieving the main goal of improving the road.

4. Work Breakdown Structure

Work Breakdown Structure (WBS) is critical in dividing the reconstruction of Highway 5 into various segments. It will make work easy to plan and control (Maylor, 2010). The process involves crucial stages including planning, designing, purchasing of materials, construction and testing. Each task is well organized in WBS which avoids any omission.

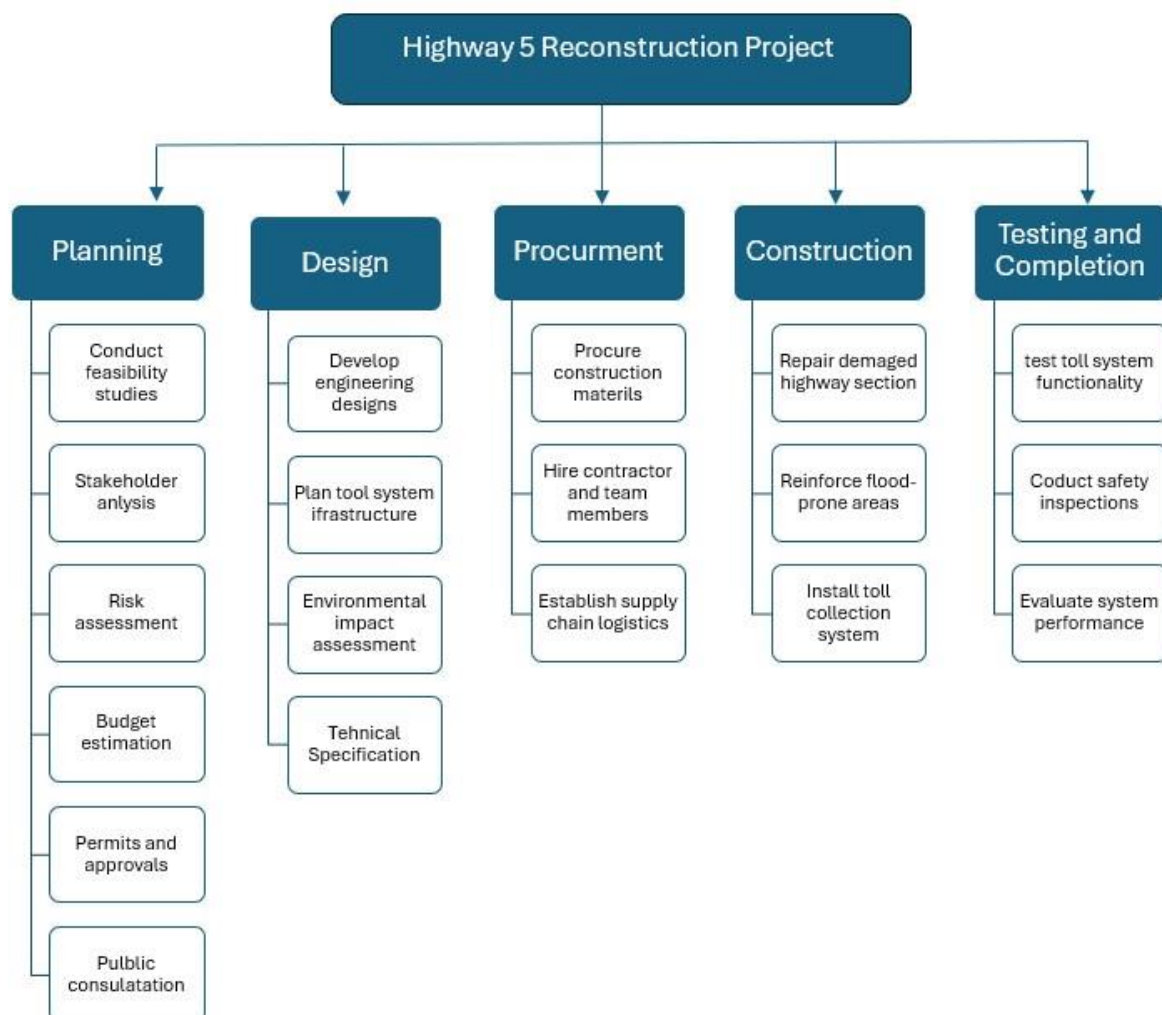
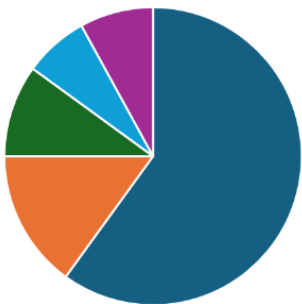


Figure 1. Work Breakdown Structure for Highway 5 Project

5. Quad Chart

The Quad Chart serves as a tool for project management, providing the necessary information about the project in an organized and compact form. By including all the key aspects of the project, the Quad Chart allows stakeholders to quickly understand the project. In the case of more complex projects, the Quad Diagram plays a crucial role in facilitating communication and decision-making (Roberts, 2011).

Table 1. Quad Chart

Highway 5 Reconstruction Project									
Objectives		Schedule							
1. To restore Highway 5 after severe flood damage 2. To improve infrastructure resilience suing flood resistant materials 3. To improve road safety and efficiency 4. Introduce toll system to public and thoroughly explain the sustainability factors to avoid backlash 5. To aid economic growth and reginal integration.									
		Phase	Timeline plan	2026				2027	
				Q1	Q2	Q3	Q4	Q1	Q2
		Planning	Jan 2026-Feb 2026						
		Design	Mar 2026-May 2026						
		Procurement	Jun 2026-July 2026						
		Construction	Aug 2026-Feb 2027						
		Testing and Completion	Mar 2027-Apr 2027						
Budget		Risks							
Budget Allocation 		Risk	Impact	Likelihood	Control measures				
		Public resistance to toll system	High	Medium	Stakeholder engagement, public consultation, clear communication				
		Technical failure in toll technology	High	Medium	Conduct regular testing, provide backup system.				
		Budget overruns	High	Medium	Regular budget monitoring.				
		Legal or regulatory delays	Medium	Low	Early approvals, compliance with regulation, legal review.				
		Environment al risks	High	Medium	Flood-resistant design, drainage improvements				

Allocation budget	Estimated																
1. Construction work	60%																
2. Materials	15%																
3. Toll system Implementation	10%																
4. Engineering and Design	7%																
5. Contingency	8%																
Estimated start-up Cost: \$120-\$170 million																	
Ongoing maintenance Cost: \$1.1 million per month																	

6. Gantt Chart

According to Collins (2026) Gantt chart is a visual tool utilized in project management for planning, scheduling, and tracking the progress of activities throughout a specific period within the project. This graphical display facilitates the understanding of the progress made in a project, coordination of activities, allocation of resources, and timely completion of the project.

Table 2. Gantt Chart

Task description	Duration		2026												2027			
	Start	End	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Planning Phase	January 2026	February 2026																
Design Phase	March 2026	May 2026																
Procurement Phase	June 2026	July 2026																
Construction Phase	August 2026	February 2027																
Testing and completion	March 2027	April 2027																

7. Stakeholder Involvement

Stakeholder involvement plays an essential role in the successful implementation of the Highway 5 reconstruction project. A stakeholder is described as anyone having an interest in the project or being impacted by the consequences of the undertaking (Parker and Craig, 2008).

Effective stakeholder management will be helpful in ensuring that there is alignment of expectations, risk reduction, and continued communication during the implementation phase (Rajhans, 2019).

7.1 Identification of Stakeholders

The stakeholders involved in the project are the following:

1. **Government authorities** are accountable for financing, authorization, and compliance with regulations.
2. **Local Council** concerned about planning and communication processes.
3. **Subcontractors and engineers** are responsible for engineering and constructing process.
4. **The local residents and road users** are affected by the construction process and by the imposition of tolls.
5. **Firms and transport organizations** depend on the highway for their operations.

7.2 Stakeholder Analysis: Mendelow's Matrix

According to Mendelow's matrix, stakeholders can be classified based on the degree of power and interest. Important stakeholders like the government, contractors, and engineers are managed carefully because they exert much power over the results of the project. Local communities, on the other hand, are updated through consultations to resolve their issues. This ensures that stakeholders are effectively engaged and the project is successfully implemented.

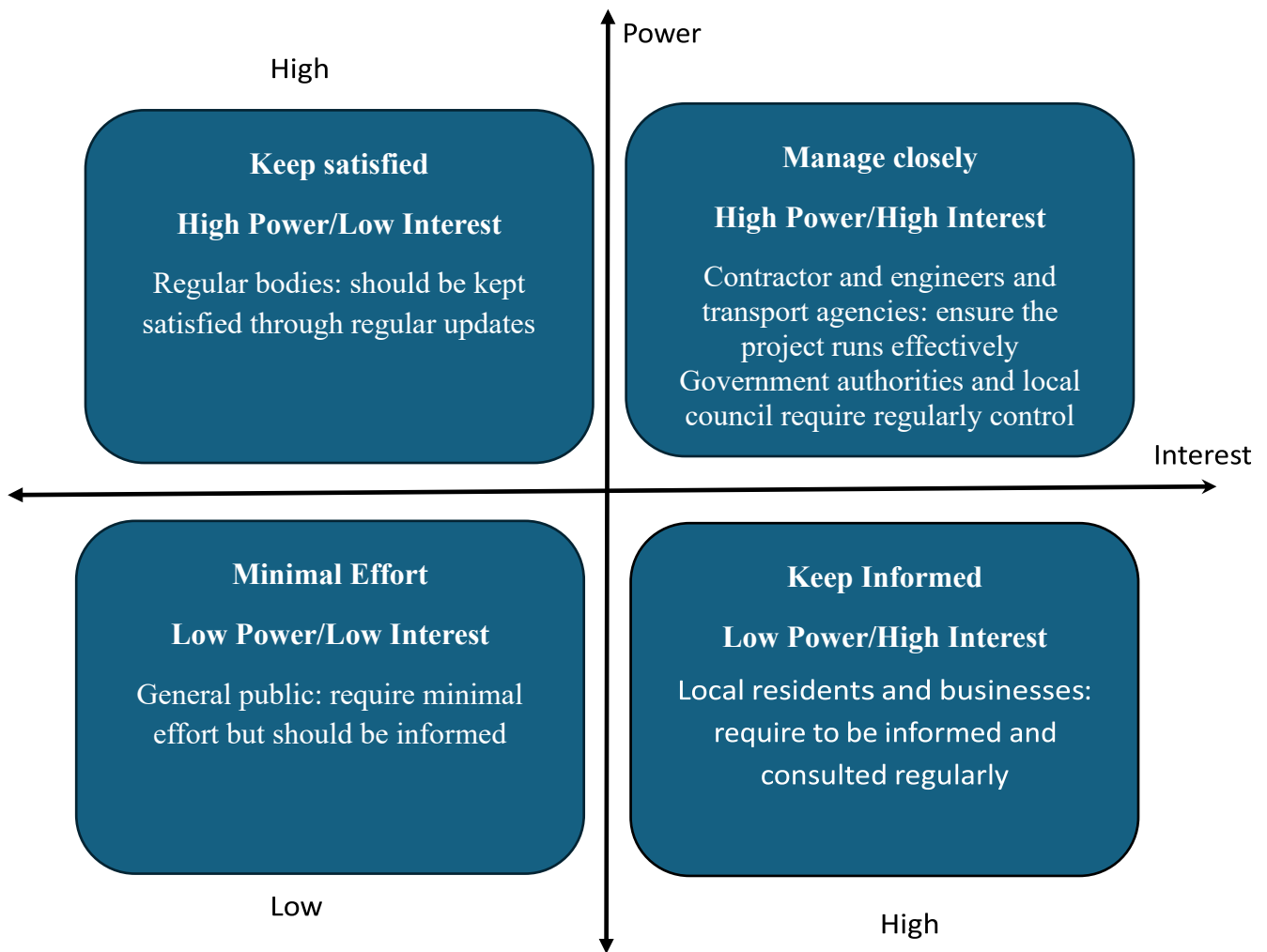


Figure 2. Mendelow's matrix

7.3 Roles and Responsibilities: RACI Matrix

RACI Matrix defines roles and responsibilities in a project by assigning people who will be responsible, accountable, consulted, and informed about tasks (Rehman, 2021). It improves coordination, minimizes confusion, and makes everyone accountable in the project. The use of the RACI Matrix becomes inevitable when dealing with an infrastructural project such as the rebuilding of Highway 5.

Table 3. RACI Matrix

Project activity	Project Manager	Engineers	Contractors	Local Council	Government Authorities
Project planning	A	C	I	C	I

Design development	A	R	C	I	I
Procurement	A	C	R	I	I
Construction	A	C	R	I	I
Testing and commissioning	A	R	C	I	I
Public communication	A	I	I	R	C
Final Approval	I	C	C	R	A

Key:

R (Responsible): carries out the project tasks

A (Accountable): ensure the project deadlines and ultimately, accountability to project completion

C (Consulted): provides expertise and expresses or input.

I (Informed): kept updated on progress

From the above table, the Project Manager is responsible for most of the activities in relation to meeting the project goals through proper planning of time, costs, and scope. Contractors and engineers are mostly responsible for technical and construction activities given their knowledge and experience concerning the deliverables of the project. The local council and government officials play vital roles in communications and obtaining necessary approvals.

7.4 Communication Plan

A communication strategy has been outlined in an attempt to facilitate communication among all the parties involved in the project (Albuali, 2021). Efficient task management is ensured by conducting weekly site meetings. Issues regarding public participation in the project can be addressed through monthly public communication sessions. The proposed strategy ensures that any misunderstanding will be avoided and decisions are made promptly (Abramo and Onitiri, 2010).

Table 4. Communication plan

Description	Frequency	Channels	Participants	Responsible
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Project progress meeting	Weekly	Email, PM system	Project team, engineers, subcontractors	Project Manager
Site coordination meetings	Weekly	Site meeting	Contractors, engineers, project managers	Site manager
Stakeholder meetings	Monthly	Zoom, Teams	Local council, government representatives	Project manager
Risk assessment and issue reporting	As needed	Internal reports, emails	Project manager, government authorities	H&S Manager
Milestone and delivery updates	At key stages	PM system	Project team, stakeholders	Project manager
Regulatory reporting	As required	Formal documents or emails	Government and regulatory bodies	Project manager
Emergency meetings (critically issue, delays)	Immediate	Teams/Zoom, emails	All key stakeholders	Project manager
Public updates	Monthly	Website, posters, social media	Residents	Project manager

8. Allocation of resources

Resource allocation is one of the key elements in project management and resource planning. It is crucial to ensure that projects are delivered on time and within budget (Darbyshire, 2023). The success of the Highway 5 project depends on the proper allocation of resources.

8.1 Human Resources Management

People are the main participants in the process of the project implementation. The role of the project manager is to supervise its implementation according to a set schedule and budget (Heagney, 2016). Engineers are responsible for designing the road; they also provide information about the necessary materials needed. Contractors will build the infrastructure onsite. IT professionals will be needed to develop the toll system; meanwhile, environmentalists will make sure that the project is implemented in accordance with laws and regulations regarding ecology. Assigning certain roles to each person contributes to a smooth course of the project (Roberts, 2011).

8.2 Material Resources

Materials resource play crucial factor in the reconstruction process of Highway 5 since they affect the quality of construction work, budget, and time schedules. Flood-resistant materials, technology, and equipment should be employed to make the road durable and protected from floods. Moreover, technological resources like cameras and sensors for automatic number plate identification are crucial for the development of the toll system.

Acquisition, transportation, storage, and distribution are part of the larger process of supply chain. According to Danshyna (2021), effective management of these activities can ensure timely delivery of supplies without incurring any extra costs.

8.3 Financial Resources

Managing finances is an essential step to ensure that a project does not exceed the budgeted amount of money. The estimated total cost varies between \$120 million and \$170 million, in addition, it will take \$1.1 million per month to maintain the road.

The project will mainly rely on government funds, meanwhile, the toll system should cover costs in the future. There should be a contingency budget for the cases when additional money is needed (Maylor, 2010).

8.4 Strategy for Resource Allocation

Resources need to be allocated differently depending on what phase of the project one considers. For instance:

- During the planning and design phase, more engineers are needed; -
During the construction phase, there is a need in labour and
machinery; - During the testing phase, IT professionals will be
helpful.

These measures will help to use available resources effectively.

Although careful planning of a project can contribute greatly to avoiding issues, some of them can occur anyway. For example, materials may be delivered late, and there might be unexpected costs and lack of labourers. These problems may have an adverse effect on the course of the project and its budget. Therefore, one should be ready to face these issues and deal with them effectively (Maylor, 2010).

9. Risk Analysis

The aspect of risk analysis is among the key parts of the project management process since it involves identifying, assessing, and implementing controls in case any threat affects the project's goals and aims (Teves, 2022). Infrastructure projects such as construction of Highway 5 experience risks associated with various aspects such as technological, financial, environmental, and political factors. Risk management is an effective way of reducing uncertainties in relation to the project (Maylor, 2010).

9.1 Risk Identification

Risks identified in this project include:

- Resistance from the public against the toll system
- Issues concerning the implementation of the toll system
- Increased costs due to increased price levels
- Risks associated with delays in procurement or construction
- Environmental risks associated with possible future floods
- Regulatory risks

These identified risks impact the cost, timeline, and success of the project.

9.2 Risk Assessment

Each risk is assessed based on how likely it is to happen and how serious its impact could be.

This supports the project team decide which risks need the most attention (Teves, 2022).

Table 5. Risk Matrix

Risk	Likelihood	Impact	Risk Level	Mitigation
Public resistance to toll system	High	High	High	Inform the public and offer exemptions where needed
Technical system failure	Medium	High	High	Use reliable and have backup system

Budget overruns	Medium	High	High	Monitor cost and include contingency funds
Procurement delays	Medium	Medium	Medium	Implement delivery plan schedule
Environmental risks	Low	High	Medium	Use flood-resistant materials
Legal/regulatory delays	Low	Medium	Low	Work closely with authorities from the start of project

9.3 Risk Monitoring

Risk management shall be done on a continuous basis throughout the entire course of the project. Meetings held at regular intervals shall assess any risk that may arise while assessing any changes in existing risks.

10. Conclusion

This project management plan provides a framework for the construction of Highway 5. This project management plan is geared towards ensuring the highway is more resilient to future changes. The use of basic project management tools such as Work Breakdown Structure, Gantt Chart, stakeholder analysis, and risk management shows how the theory of project management can be translated into practice. The tools help in organizing and controlling processes, making it easier to deliver the project within the time frame, cost, and scope of work (Maylor, 2010). The effectiveness of the project management plan will depend on its ability to factor in realistic assumptions in the implementation process. The stakeholders' expectation may change depending on the implementation of the toll system. The scheduling and budgeting of the

project are based on specific assumptions. Factors such as delay, escalation of cost, and adverse weather conditions may affect these assumptions.

The risk analysis shows that despite the identification of possible risks and their mitigation measures, some element of uncertainty cannot be controlled. Monitoring and implementation of contingency plans are necessary.

The project will be successful depending on how well it is planned initially, managed, communicated, and responsive to challenges that arise during implementation.

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Appendix A – Feedback received from tutor and peers

Dear Ventsislav,

Thank you for presenting your poster it looks great and provides clear, informative insight into the project. You have successfully included key elements such as the objectives, Work Breakdown Structure (WBS), stakeholder list, risks, benefits, and initial cost estimates.

You may now proceed with the next stages of the task. As you do, please ensure you further develop your stakeholder engagement strategies by incorporating tools such as Mendelow's Matrix, a RACI matrix, and a detailed communication plan.

Regarding the initial cost, please ensure that it aligns with the allocated budget. Also, keep in mind the three core pillars of project management: cost (budget), time (schedule), and scope, ensuring these remain balanced throughout your planning.

Overall, this is a strong start to the project. Wishing you continued success as you move forward.

Kind regards,