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MODULE NAME: PROJECT
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REBUILDING THE PRINCIPAL TRANSPORTATION CORRIDOR IN BRITISH COLUMBIA POST-2022 FLOODING

INTRODUCTION

In 2022, British Columbia (BC) experienced catastrophic flooding caused by an atmospheric river, which destroyed highways, bridges, and other key infrastructure. This led to landslides and the collapse of multiple bridges, effectively cutting off the lower mainland from the rest of Canada (Government of British Columbia, 2022). Without urgent reconstruction, BC risks ongoing supply shortages, economic losses, and severe social disruption (Transport Canada, 2022).

OBJECTIVE

The project aims to rebuild the principal transportation corridor to ensure safe and efficient movement of goods and people. The strategic aim is to integrate climate-resilient infrastructure and sustainable construction practices (Kerzner, 2022).

SCOPE

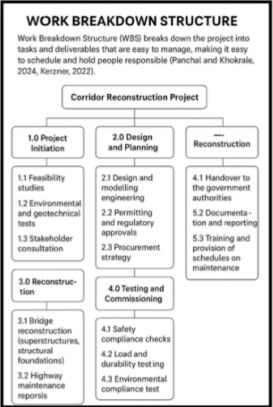
Inclusions:

- Bridge reconstruction.
- Highway repair and reinforcement.
- Flood management systems (drainage, slope stabilization).
- Smart monitoring technologies for resilience (Turner, 2020).

Exclusions:

- Private property restoration.
- Non-transport redevelopment (Lock, 2020).

Category	Percentage of Budget	Amount (CAD Millions)	Details
Design & Planning	10%	180	Feasibility studies, engineering design, modeling, permitting, environmental/geotechnical assessments
Construction & Reconstruction	70%	1,260	Bridge rebuilding, highway repairs, slope stabilization, drainage and culverts, smart monitoring systems
Testing & Commissioning	10%	180	Load/durability testing, safety compliance, environmental approval
Contingency Reserve	10%	180	Risk buffer for inflation, supply chain disruptions, extreme weather delays
Total	100%	1,800	



QUAD CHART

Objective

Restore and modernize BC's transportation corridor to protect supply chains and communities (Transport Canada, 2022).

Key Deliverables

- Reconstructed bridges and highways.
- Drainage and flood-resistant systems.
- IoT-based monitoring sensors.
- Maintenance framework (PMI, 2021).

Timeline & Budget

- 36 months (3 years).
- CAD 1.8 billion

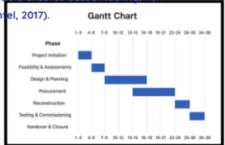
Risks & Mitigation

- Weather delays → seasonal scheduling.
- Budget overruns → Earned Value Management (Fleming & Koppelman, 2016).
- Stakeholder conflicts → structured engagement processes (Bourne, 2015).
- Environmental impact → sustainable practices (Hillson, 2017).



GANTT CHART

The Gantt chart illustrates the 36-month reconstruction project timeline, showing sequential and overlapping phases for efficiency. Initial feasibility studies (Months 1-3) are followed by design and planning (Months 4-9), overlapping with procurement (Months 7-9) to prevent delays. The main reconstruction works span 18 months (10-27), ensuring bridges, highways, and drainage are restored. Testing and commissioning (28-33) verify safety and resilience before final handover and closure (34-36). This schedule ensures accountability, risk control, and timely project delivery (Meredith & Mantel, 2017).



STAKEHOLDERS

- Government of British Columbia
- Transport Canada
- Municipalities & Indigenous communities
- Logistics companies & businesses
- General public
- Environmental agencies (Freeman, 2010; Bourne, 2015)

RISK MANAGEMENT

Risk mitigation for the BC corridor reconstruction project adopts a proactive and systematic approach based on ISO 31000 guidelines (ISO, 2018). To address extreme weather disruptions, seasonal scheduling and real-time meteorological monitoring will be applied, alongside buffer periods in the timeline. Budget overruns will be controlled through Earned Value Management (EVM), phased procurement, and fixed-price contracts where possible (Fleming & Koppelman, 2016). For supply chain risks, supplier diversification, forward contracts, and contingency stockpiles of critical materials will reduce vulnerability to shortages or inflation. Environmental risks will be mitigated through detailed Environmental Impact Assessments (EIA), the use of eco-friendly materials, and compliance with federal sustainability standards (Hillson, 2017). To manage stakeholder conflicts, structured consultation with Indigenous communities, municipalities, and businesses will ensure inclusion and social acceptance (Bourne, 2015; Freeman, 2010). Finally, workforce shortages will be minimized through flexible hiring, subcontracting, and targeted training programs (Kerzner, 2022).

EXPECTED OUTCOME

- Restored national connectivity.
- Reduced supply chain disruptions.
- Safer, climate-resilient infrastructure.
- Stronger collaboration with communities and businesses (PMI, 2021; Lock, 2020).

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Reflection Report – Poster Presentation

This poster is relatively easy to communicate the message, and it is well presented since the creators used simple language to clarify on the case facts.

The poster presentation proved to be a valuable experience that helped me to express my project and show my knowledge of its aim, plan, and result. When considering my performance and the evaluation feedback, I managed to define the strong sides and the further improvement areas that will allow me to become a better academic and professional presenter in the future.

The evaluation form showed that I received the most scores between two and three in the various categories which imply that I was rated as performing well at work but with a lot to be desired. I scored three in the Introduction and Project Description. This means that I have given a fairly clear explanation of the overall idea and context of the project. In my opinion, I could share the main purpose of my work, still, maybe I was not specific enough about the background or meaning of the problem. Next time I present, I would like to provide more contextual information, relating the project to real-world problems or academic works more directly, which would be more likely to make my introduction more interesting and informative.

One of the weak areas was the Quad Chart section which had a score of two. This feedback indicates that I was not comprehensive or thorough when explaining the purpose of the project, stakeholders, desired outcomes and measurements. I have understood that I was not as effective in organising this section and listing each element and giving only brief but informative information. To illustrate, I would have defined some objective deliverables and involved major stakeholders to make the scope of the project more concrete. Next time, I will put more time in preparing the visual representation of the quad chart to ensure that it is more understandable and less confusing to the audience.

I also scored three in the Work Breakdown Structure and resource allocation. This implies that I was not great at planning and organising but decent. I was able to map out the key activities and steps, but I would have been more persuasive as to how the resources were allocated or how time was spent. In order to get better, I will apply more specific project management instruments, including Gantt charts or workload estimations, to show a superior grasp of resource planning.

Lastly, my Presentation and Professionalism score was two, and it means that I need to develop my delivery and communication skills. Considering my performance, I understand that I was not quite sure about making a presentation with the poster. I might have talked too fast and failed to connect with the audience as I would have done. Some of the areas that I will develop are my presentational style by practicing, maintaining eye contact, confident body language, and rehearsing to a greater extent before the final presentation.

Altogether, this experience has helped me to learn some important things regarding the good communication, organisation, and professional presentation. On the one hand, my content demonstrated a level of knowledge of the subject, but on the other hand, the delivery can be improved and the structure of my content can be changed considerably. In the future, I would like to improve my presentation skills, visual design and use feedback in a constructive way to create a more polished and effective presentation in further academic or professional context.

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PART C- Project Management Plan

In 2022, the devastating floods of the region of British Columbia (BC) destroyed key infrastructure, including the 1 Highway (Trans-Canada) and the 5 Highway (Coquihalla), isolating the lower mainland of the country. The result of this interference was catastrophic economical, social and logistical problems and over 60 per cent of freight traffic through Pacific ports relied on the routes. The proposed Project Management Plan (PMP) presents a methodical approach to the rebuilding of this important corridor that pays attention to climate and sustainability and collaboration with stakeholders. The project will be completed in four stages where a CAD 1.8 billion project will take 36 months to be complete that will include assessment and design, reconstruction, testing and commissioning, and handover. Scope will involve bridge reconstruction, highway renovation, modern drainage systems, slope stabilization, plus incorporation of IoT-enabled monitoring devices. Value balances a financial, material, human, and technological requirement, and the cost control is made possible by Earned Value Management. Consultation with Indigenous peoples, local governments, and corporations will guarantee inclusivity and reduce the level of conflict. Extreme weather effects, budgets, supply chains, and labor shortages are some of the risks that are to be addressed with the help of ISO 31000 aligned strategies. With innovation in engineering and sustainability, the project will reconnect the nation, safeguard communities, and develop a robust transportation concept that will be flexible to climate changes in the future.

Table of Contents

Executive Summary 2

Introduction 4

Project Description 4

Scope 5

Work Breakdown Structure 6

Quad Chart 7

Gantt Chart 8

Stakeholder Involvement 9

Allocation of Resources 10

Risk Analysis 14

Conclusion 15

Reference 16

List of Figures

Figure 1 QUAD Chart 7

Figure 2 Gantt Chart 9

List of Tables

Table 1 Gantt chart and phases	9
Table 2 Resource Allocation	14

Introduction

In 2022, British Columbia (BC) was hit by catastrophic floods due to an atmospheric river, leading to landslides, bridge collapses and destruction of vital infrastructure. The major effects were the destruction of the major transportation route linking the lower mainland with the rest of Canada. This disturbance induced significant logistical, social, and economic issues, because the corridor is the staple of the national trade and connectivity (Government of British Columbia, 2022). The highway 5 (Coquihalla Highway) and some sections of Highway 1 (Trans-Canada Highway) were collapsed which slowed the movement of necessary goods such as agricultural products and medication. The effects of this were extensive on businesses, communities, and national supply chains (Transport Canada, 2022). This is the Project Management Plan (PMP) providing the organized strategy of the reconstruction of the main transportation path. It uses project management models to establish project goals, scope, deliverables and the methodologies. It also incorporates the stakeholder engagement, resource allocation, and risk analysis plans to make the implementation successful. The project aims to re-establish the necessary connectivity and

7

safeguard the economy of BC against climate-related risks in the future through engineering innovation and climate resiliency (Kerzner, 2022).

Project Description

The project is dedicated to reconstruction of the main transport route of goods and people, which involves reconstruction of highways, bridges, and drainage systems that were ruined due to the 2022 floods. The corridor is among the key links in transportation in

Canada with over 60 percent of all freight in and out of the Pacific ports depending on it (Transport Canada, 2025). Its interference caused trade bottlenecks, commodity price inflation and limited access to thousands of commuters. The project to be proposed will be conducted in four stages. Assessment and Design will imply geotechnical and environmental investigations to identify safe and sustainable ways of reconstruction. Second, Reconstruction will involve repairing bridges that have fallen down, repairing damaged areas of highways and installing strong flood protection systems. Third, Testing and Commissioning will ensure structural safety, loading capacity and engineering codes adherence. Lastly, Handover and Maintenance Planning will make the management structure sustainable to manage the long-term resilience (Zhou et al.,2024).

It is estimated that the project will take 36 months and the approximate budget is CAD 1.8 billion. New strategies will be embraced such as the use of reinforced materials, slope stabilization, and Internet of Things (IoT)-based monitoring systems to identify stress points (Fleming and Koppelman, 2016). The project will recover the national connectivity and protect the infrastructure of BC against future consequences of climate change events, as it will be both recovery and resilience-oriented. It is in line with the climate adaptation strategies of Canada and it provides continuity in goods, services, and people movement (ISO, 2018).

Scope

Scope Inclusions:

Repair of collapsed bridges on Highway 5 and Highway 1.

Fixing and strengthening of the damaged highway sections.

Modern drainage and flood control systems developed.

Placing slope protecting and embankments, which are climate resistant.

Installation of smart surveillance in real-time safety evaluation.

Collaboration with Indigenous people, cities and corporations to incorporate social and environmental interests.

Scope Exclusions:

Repair of personal possessions (homes, farms, schools).

Broader city regeneration other than transport corridors regeneration.

Maintenance after over a year after handover.

Deliverables:

A complete and climate-resilient corridor that would reinstate BC to the mainland in Canada.

Canadian engineering, environmental and safety standards.

A sustainability strategy to reduce the cost of maintenance in the long term.

The scope is a compromise between the urgent demand to rebuild and the obligation to create resilient infrastructure. This will guarantee that the corridor will be resistant to future disasters associated with climate changes and offer dependable access to communities and trade partners (Meredith and Mantel, 2017).

Work Breakdown Structure

Work Breakdown Structure (WBS) breaks down the project into tasks and deliverables that are easy to manage, making it easy to schedule and hold people responsible (Panchal and Khokrale, 2024 ; Kerzner, 2022).

Level 1: Corridor Reconstruction Project

1.0 Project Initiation

9

1.1 Feasibility studies

1.2 Environmental and geotechnical tests.

- 1.3 Stakeholder consultation

2.0 Design and Planning

2.1 Design and modelling engineering.

2.2 Permitting and regulatory approvals.

2.3 Procurement strategy

3.0 Reconstruction

3.1 Bridge reconstruction (superstructures, structural foundations)

3.2 Highway maintenance (repair (pavement, reinforcement, embankments)

3.3 Flood protection (drainage, culverts, slope stabilization)

3.4 installation of smart monitoring systems.

4.0 Testing and Commissioning

4.1 Safety compliance checks

4.2 Load and durability testing

4.3 Environmental compliance test.

5.0 Project Closure

5.1 Handover to the government authorities

5.2 Documentation and reporting, company will prepare reports on its performance in the year and its financial state at the end of the year.

5.3 training and provision of schedules on maintenance.

The WBS is used to make sure of a logical flow and reduction of risk and responsibility (Lock, 2020).

10

Quad Chart

Figure 1 QUAD Chart

A Quad Chart is a summary of the project in a visual form as shown in figure 1 (Turner, 2020).

1. Project Objective

It aims to reconstruct the major corridor in British Columbia so as to restore transportation of goods and people with the incorporation of measures of climate resilience and sustainability.

2. Key Deliverables

Reconstructed highways and bridges.

11

Strengthened drainage and flooding structures.

Smart monitoring infrastructure based on IoT.

Maintenance and resilience framework.

3. Timeline and Budget

Timeline: 36 months (3 years).

Budget: CAD 1.8 billion.

Stages: Evaluation/Assessment/Design/Reconstruction/ Testing/ Handover.

4. Risks and Mitigation

Delay of extreme weather conditions through seasonal planning, real-time monitoring.

Budgets overruns - Earned Value Management (EVM) and progressive acquisition.

Environmental effects → overall evaluations and green materials.

Stakeholder dilemmas → Ongoing consultation with Indigenous populations, corporations and cities.

The Quad Chart allows stakeholders to gain a fast overview of the scope of the project, its goals, risks, and resources requirements, and provides transparency and alignment among all the stakeholders (Freeman, 2010; Bourne, 2015).

Gantt Chart

Gantt chart is a representation of the project schedule in terms of time, indicating dependencies of the tasks and project milestones (Lock, 2020). In the case of the reconstruction of the corridor, it is planned to be done within 36 months as shown in Table 1 and Figure 2.

Table 1 Gantt chart and phases

Phase	Du rat io n (M on th s)	Timeline (Months)	Depen dencie s

Feasibility and Assessments	3	1–3 months	None
Design and Planning	6	4–9	Phase 1
Procurement	3	7–9	Phase 2
Reconstruction	18	10–27	Phase 2–3
Testing and Commissioning	6	28–33	Phase 4
Handover and Closure	3	34–36 months	Phase 5

The Gantt chart ensures that sequencing of tasks is respected. The example of procurement is that it cuts across planning to optimize delays and the reconstruction process begins immediately the design is approved. Regular progress monitoring will be performed with the help of project management software (MS project or Primavera) (Tom and Paul, 2013). Some of the milestones would be checkpoints such as Bridge Reopening

and Completion of Corridor Testing. It is a scheduling strategy that ensures that the project stays on schedule and holds it responsible (Kerzner, 2022).

Figure 2 Gantt Chart

Stakeholder Involvement

13

Engagement of stakeholders is a primary success of the big infrastructural projects (Freeman, 2010).

Stakeholders:

Government of British Columbia: Sponsor of the project, funding and control.

Transport Canada: Regulatory body that holds accountability in regard to national standards.

Municipalities and Indigenous Communities: These are directly influenced by construction as well as long term use.

Corridor-dependent Businesses and Logistics Companies: Rely on the supply chains.

General Public: Road-side distractions that will affect commuters and residents. Environmental Agencies: Make sure that ecological standards and sustainability are incorporated.

Engagement Strategies:

Consultation and Collaboration:

Frequent consultations with Indigenous peoples and communities to apply traditional knowledge and local issues (Bourne, 2015).

2. Transparent Communication:

Annual reports, newsletters and online communications to keep people informed on the progress of the project and hitches.

3. Formal Governance Structures:

The project will have a multi-stakeholder steering committee to manage project progress and accountability as well as shared decision making (Daviet et al.,2011).

4. Mechanisms of Conflict Resolution:

Disputes will be resolved very fast by mediation and grievance redressal processes and will minimize risks of legal delays.

14

The project meets the needs of stakeholders with technical and economic goals by focusing on constant interaction and openness to minimize resistance and increase social license to operate (PMI, 2021).

Allocation of Resources

The central focus of efficiency, reduction of waste, and value creation is good resource allocation to a project. The rebuilding of the flooded corridor in British Columbia (BC) must be properly balanced in terms of human resources, financial resources, material resources, and technological resources. This guarantees that the project complies with the cost, time, and quality constraints and introduces the resilience to future disruptions associated with climate (Meredith and Mantel, 2017).

Human Resources

Coordination and expertise of human capital is important in the success of large-scale infrastructural projects. In this project, there will be three categories of resources:

Core Project Team: These will consist of the Project Manager, civil and structural engineers, environmental scientists, geotechnical specialists, procurement officers, health and safety managers and financial controllers. Their functions will be to make sure that technical designs, environmental protection, and cost-efficiencies meet the project objectives.

Support Workforce: Contractors, subcontractors, construction workers and Indigenous community advisors will be employed to offer support. Their implementation will be in the phase manner and the peak labor demand will be at the 18 months period of reconstruction. They will be trained on specific resilience-building strategies, including slope stabilization and the utilization of intelligent sensors, to be as productive and safe as possible (Kerzner, 2022).

Specialist Advisors: These will be climate adaptation advisors, sustainability consultants, public communication officers to keep the environment compliant and keep all stakeholders transparent. Pinto (2019) mentions that the assessment of advisors who represent other fields contributes to fewer blind spots and enhances trust among the stakeholders.

Financial Resources

The estimated cost of CAD 1.8 billion will be allocated according to various stages of the project as also listed in Table 2:

Design and Planning

Testing and Commissioning

Contingency Reserves

Reconstruction and Construction

The financial model will be based on Earned Value Management (EVM) to track the performance in terms of cost and schedule (Acebes et al.,2013 ; Fleming and Koppelman, 2016).

Material Resources

The rebuilding should be constructed using robust materials that have the capacity to resist the climatic shocks in future. Major resources include:

High-Strength Steel and Reinforced Concrete : When high load is required, durability is required in situation with bridges along at highways.

Geotextiles and slope stabilization Materials: To reduce landslide and erosion risk in mountainous regions.

Drainage Pipes and Culverts: These are constructed so that they can handle a tremendous volume of water in case of the atmosphere river happening.

IoT-Embedded Sensors: To determine structural integrity and provide real time alerts.

The procurement will be based on the just in time policy of sensitive materials and also on the buffer stock of high risk supply chain elements. Diversity in suppliers, at a local and global level, will safeguard against cost shortage or rise, as the COVID-19-related supply disruptions taught us (World Bank, 2020).

Technological Resources

16

Incorporation of technology will enhance monitoring, risk and efficiency in the project. The important technological tools are:

Scheduling, dependency tracking and reporting Project Management Software (MS Project, Primavera)

Geographic Information Systems (GIS) to analyze terrain and map flood risks, and plan slope stabilization.

Building Information Modelling (BIM) to develop online versions of bridges and highways to predictive maintenance.

IoT and Remote Sensors to monitor the structural stress, load, and the environmental conditions in real-time.

This will reduce downtime and improve the duration of the life cycle of assets by the integration of BIM and IoT (Panchal and Khokrale, 2024). The technologies assist in the proactive infrastructure management system as opposed to the reactive.

Table 2 Resource Allocation

Category	Percentage of Budget	Amount (CAD Millions)	Details
Design & Planning	10%	180	Feasibility studies, engineering design, modeling, permitting, environmental/geotechnical assessments
Construction & Reconstruction	70%	1,260	Bridge rebuilding, highway repairs, slope stabilization, drainage and culverts, smart monitoring systems
Testing & Commissioning	10%	180	Load/durability testing, safety compliance, environmental approval
Contingency Reserve	10%	180	Risk buffer for inflation, supply chain disruptions, extreme weather delays

Total	100%	1,800
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Strategic Resource Synergy

The uniqueness of resource allocation of this project is the category synergy. Sustainability measures are well funded through financial allocation and technological resources boost the decision making of human beings. Indicatively, the IoT-based sensors can ease the burden on inspection teams and deliver real-time information, which reduces labour expenses and risks. On the same note, GIS solutions will assist environmental scientists in adhering to the standards of the Canadian environmental standards (ISO, 2018).

Overall, the resource apportionment of this project of reconstructing the corridor is not only geared towards assisting to restore the infrastructure, but also integrating the long-term climate-resistant and sustainability. Through the human resources, operational excellence is developed, through the financial resources, budgetary discipline is facilitated, through the materials, structural resilience is facilitated and through the technology, efficiency and innovation are developed. Under these circumstances, the project aids to decrease wastage and increase accountability, and makes Canada critical transportation network rebuilt more powerful and intelligent than ever (Pinto, 2019).

Risk Analysis

Infrastructure post reconstruction following natural disasters is a dangerous venture. The project is based on the Israeli framework of risk management the ISO 31000, and it is aimed at risk identification, assessment, mitigation, and monitoring (ISO, 2018).

Risk and Risk Management:

1. Extreme Weather Events

Impact Work stoppage and delays.

Mitigation: Project plan, weather prediction systems and buffer time.

2. Budget Overruns

Effects: More financial stress on provincial and federal governments.

18

Reducing: Use Earned Value Management (EVM), gradual procurement and strict cost control (Acebes et al., 2013).

3. Environmental Impacts

Impact: Destruction of ecosystems to popular dislike.

Mitigation: Carry on Environmental Impact Assessment (EIA) and apply environmentally “friendly building materials” (Hillson, 2017).

4. Stakeholder Disputes

Impact: Delays because of collisions with Indigenous communities or companies.

Mitigation: Open consultation, institutional conflict resolution systems and directing committees.

5. Supply Chain Disruptions

Impact: Construction materials are short or inflated.

Mitigation: Supplier contracts are diversified, procurement is made early and contingency stock is held.

6. Labour Shortages

Impact: Decreased productivity and project delay.

Mitigation: Training, subcontracting and flexible labour hiring policies.

A “risk register” will be kept on a continuous basis, updated on a monthly basis and managed by a designated risk management officer. The project can increase the chances of successful completion within time and estimated budget by promptly addressing the risks (Kerzner, 2022).

Conclusion

Conclusively the 2022 British Columbia floods pointed to the fact that critical infrastructure

19

is susceptible to the effects of climate-related disasters. The rebuilding of the key transportation line is not only an economic need, but also social one, which will ensure a reliable access to businesses, communities, and supply chains in Canada.

This Project Management Plan has given an organized approach to the reconstruction of corridors including the key components of project management like scope, work breakdown structure, scheduling, stakeholder participation, resource allocation and risk

analysis. It has suggested a 36-month schedule and CAD 1.8 billion budget with the help of the advanced monitoring technologies and resilience-oriented design. The plan emphasizes the permanent stakeholder involvement, in particular, Indigenous people and municipalities in order to balance the technical objectives with social and environmental interests. In addition, resource allocation and risk management systems such as Earned Value Management and ISO 31000 will underpin cost control and resilience planning. These measures in place not only improve much-needed connectivity, but also equip the area to counter climate shocks in the future. Lastly, a sustainable infrastructure recovery model in Canada that balances the economic, environmental, and social demand will be developed using the new corridor.

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21

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