

POSTER

REBUILDING THE FUTURE NEW SCHOOL

Flooding in 2022, in British Columbia, Canada, destroyed Elementary. This project rebuilds the school with modern, flood-resilient and sustainable design.

Project Objective:

To rebuild the school in a safe sustainable, and accessible way offering a welcoming environment that encourages learning and development for children in the community.

Main Goals:

- Construction of 15 flood-resistant classrooms
- Implementation of a rainwater harvesting system
- Installation of solar panels to reduce energy costs
- Creation of a green area and community school garden

	Mar/Aug	Set/Nov	Dez/Jul	Aug
Design & Approvals				
Site prep				
Construction				
Handover				

STAKEHOLDER	ROLE
Ministry of Education	Project sponsor
Project Manager	Oversees planning & delivery
Construction Contractor	Builds the new school
Local Community	End users



Budget:

Construction- \$16M	Equipment- \$2M
Systems- \$3M	PM& Design- \$1.5M
Site Prep- \$4M	Contingency- \$1.5M

Scope:

- Site remediation and raised foundation
- Two-story 5,000 m² building
- Utilities, playground, parking, and solar features

Expected Impact:

Directly benefit more than 500 students and their families.
Strengthen a sense of community and belonging
Serve as a model for a sustainable and resilient school in the face.

Risks & Mitigation:

- Weather: Flexible schedule
- Supply chain: Local sourcing
- Budget: Monthly cost tracking
- Labor: Multiple contractors

Public Safety Canada. (2022). After-Action Report: 2021–2022 British Columbia Floods. Government of Canada

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Module code: LCLM5003

Lecture's Name: Rexon Niting



REFLECTION FROM THE FEEDBACK

In week 6, I presented my Project Proposal for the reconstruction of a primary school after a 2022 flood in British Columbia. My Tutor explained perfectly several times how our poster should be, with all the necessary details so that we could understand and do a great job. This project was an excellent experience for me. At the end of my presentation, my tutor asked my classmates if they had any questions to ask, but they didn't ask any questions or give opinions about my project. However, I received feedback from my tutor, which was very important to me, as I was able to see both positive and negative points in my project. My tutor told me that my poster was very good, mentioned that the background colours were good and very visible, said that what I wrote was very clear and that it was perfectly understandable what I wanted to express on the poster, and that I also gave a great presentation. On my poster, I placed a photo of a school being rebuilt, which filled the space well and gave more emphasis to the topic I was working on. I put the timeline in the form of a Gantt Chart, just like the one I researched on the Internet. It looked good, but it wasn't exactly how my tutor would have liked it because it was too simple and needed more details. So, he said I could improve it a bit. I placed the stakeholder information in a table, which made it stand out and be right in the middle of my poster, earning me another positive feedback. Regarding the budget, I included it on the poster, but I forgot to put it in the table. My tutor told me that I should include it in the table because that way it would stand out and people could see it better. Another thing my Tutor told me to do was to swap the position of the Expected Impact section with the Main Goals section, so the sequence would be better for people to have a clearer view. With all this feedback, I was able to see the points that needed to be changed

to improve my poster. I included just one reference at the bottom of the poster; my Tutor did not comment on it, but I think it was good and in the right place where my Tutor asked me to put it. For everything to be perfect, as I would have liked it to be, I applied all the tips given by my Tutor and put them into practice, changed everything that needed to be changed, and added everything that needed to be added. Now my poster is perfect for me, and I hope it's almost perfect for my Tutor.

Project Management Plan



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INTRODUCTION

In 2022, a severe atmospheric river hit British Columbia and caused some of the most intense flooding the province had seen in decades. Rivers overflowed, soils saturated, and entire communities experienced landslides, evacuation orders, and widespread property loss. Public buildings were hit hard. Among those affected was an elementary school that suffered irreparable structural damage. The facility had to be closed, leaving hundreds of students without a safe, stable learning environment.

Schools do more than deliver curriculum; they provide routine, support services, meals, social development, and a sense of belonging. The loss of this school disrupted families, stressed the education system, and created long-term challenges for the community.

As the project manager assigned to restore the school, the goal is to deliver a modern, safe, flood-resistant facility designed to support student learning while also improving community resilience. This Project Management Plan outlines how the school will be rebuilt using clear project management processes, including scope definition, scheduling, risk planning, stakeholder engagement, and resource allocation. It also emphasizes the larger vision underlying the reconstruction: establishing a space that can adjust to future climate challenges, function as a centre during emergencies, and provide enduring benefits to students, families, and the local community. By considering both technical planning and the needs of the community in the project, the reconstruction transcends mere construction; it transforms into an investment in stability, readiness, and the welfare of future generations.

PROJECT DESCRIPTION

Purpose

To construct a new elementary school using modern, safe and sustainable design principles that can withstand future flooding while providing high quality educational spaces.

Objectives

- Rebuild a safe and fully accessible school for children in the affected community.
- Provide a design that improves resilience to future floods and extreme weather.
- Incorporate sustainable features such as solar energy and a rainwater harvesting system.
- Strengthen community connections by creating green spaces and shared learning areas.

Expected Impact

- Over 500 students and their families regain a stable educational environment.
- A stronger sense of community and continuity following the disaster.
- A building that serves as a model for climate-resilient school design.
- Reduced energy consumption and operating costs due to sustainable systems.

SCOPE

In Scope

- Design and approval of fully compliant, flood-resistant school.
- Construction of two-story, 5.000m² building.
- Site remediation and foundation raising to protect against flood risk.
- Installation of solar panels and rainwater harvesting system.
- Playground, parking, and outdoor learning space development.
- Landscaping, fencing, and community garden installation.
- Procurement of educational equipment and furnishings.

Out-of-Scope

- Repair of surrounding homes or private property.
- Upgrades to nearby public buildings unrelated to school operations.
- Long-term school programming or curriculum changes.

Project Assumptions

- Funding is secured through the Ministry of Education and relief programs.
- Construction materials are available through local suppliers.
- Permits and environmental approvals will be granted.

WORK BREAKDOWN STRUCTURE

1. Project Initiation

- 1.1 Project charter
- 1.2 Approval from Ministry of Education
- 1.3 Appointment of project team
- 1.4 Initial stakeholder meeting

2. Planning & Design

- 2.1 Environmental site assessment
- 2.2 Food-resilience engineering study
- 2.3 Architectural design
- 2.4 Structural and mechanical designs
- 2.5 Budget confirmation
- 2.6 Permit applications
- 2.7 Tendering process

3. Site Preparation

- 3.1 Demolition of damaged structures
- 3.2 Soil remediation
- 3.3 Foundation raising and grading
- 3.4 Utility relocation

4. Construction Phase

- 4.1 Foundation and concrete work
- 4.2 Structural Framing
- 4.3 Roofing and exterior enclosure
- 4.4 Mechanical, electrical, plumbing installation.
- 4.5 Interior walls and flooring
- 4.6 Classroom finishing

4.7 Playground construction

5. Sustainable Systems Installation

5.1 Solar panel system

5.2 Rainwater harvesting system

5.3 Energy efficient lighting system

5.4 Heat-pump HVAC installation

6. Testing and Commissioning

6.1 Safety inspection

6.2 Systems testing

6.3 Occupancy approval

7. Handover & Closeout

7.1 Move-in coordination

7.2 Staff orientation

7.3 Documentation and final report

7.4 Project closure meeting

RISK MANAGEMENT

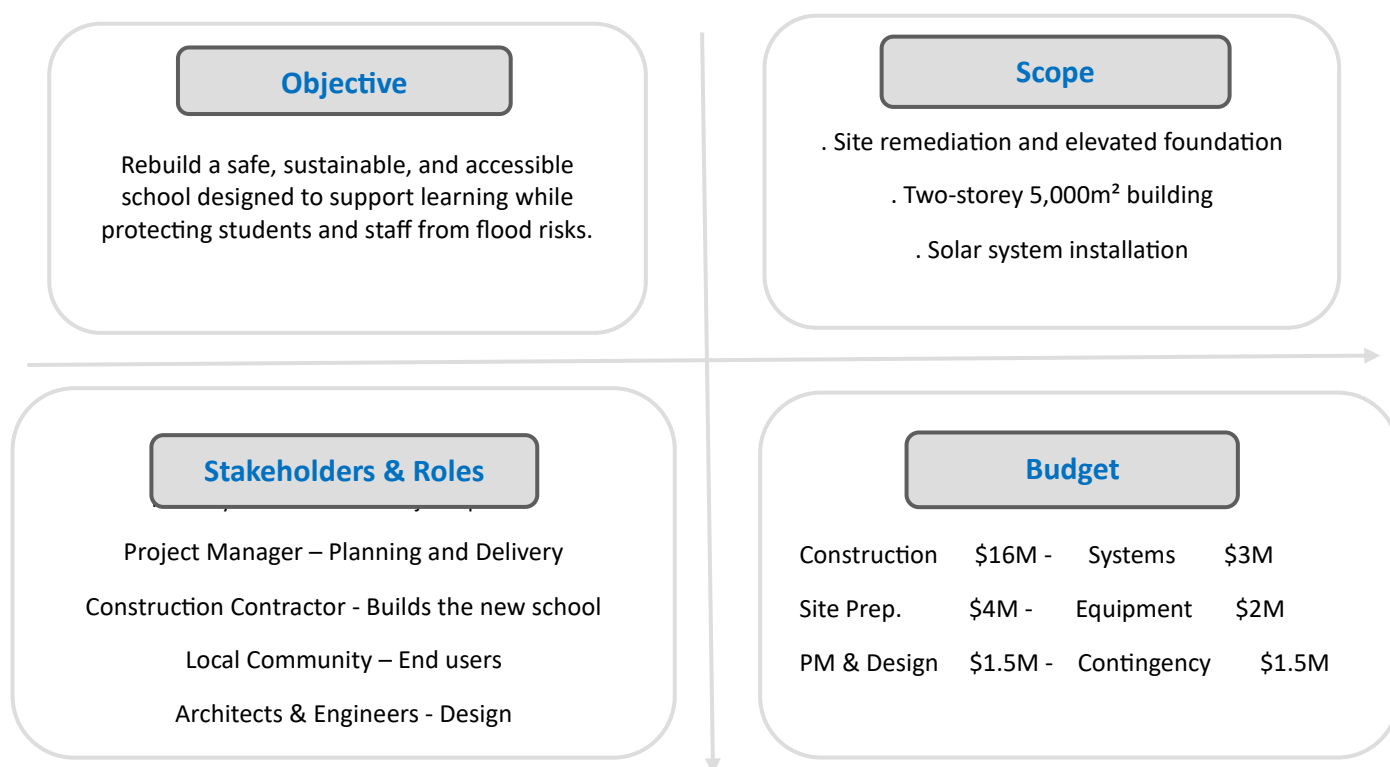
Key Risks & Mitigation

RISK	LIKELIHOOD	IMPACT	MITIGATION
Delays due to weather	Medium	High	Build buffer into schedule; adjust sequence of outdoor vs indoor work
Contractor shortages	Medium	Medium	Pre-qualify backup contractors; confirm availability before procurement
Cost escalation for materials	High	High	Lock in pricing; maintain a 10-15% contingency fund
Safety incidents on site	Low	High	Enforce safety protocols; weekly toolbox talks; site supervision
Community disruptions	Low	Medium	Communicate construction schedules; early; restrict loud work to approved

QUAD CHART

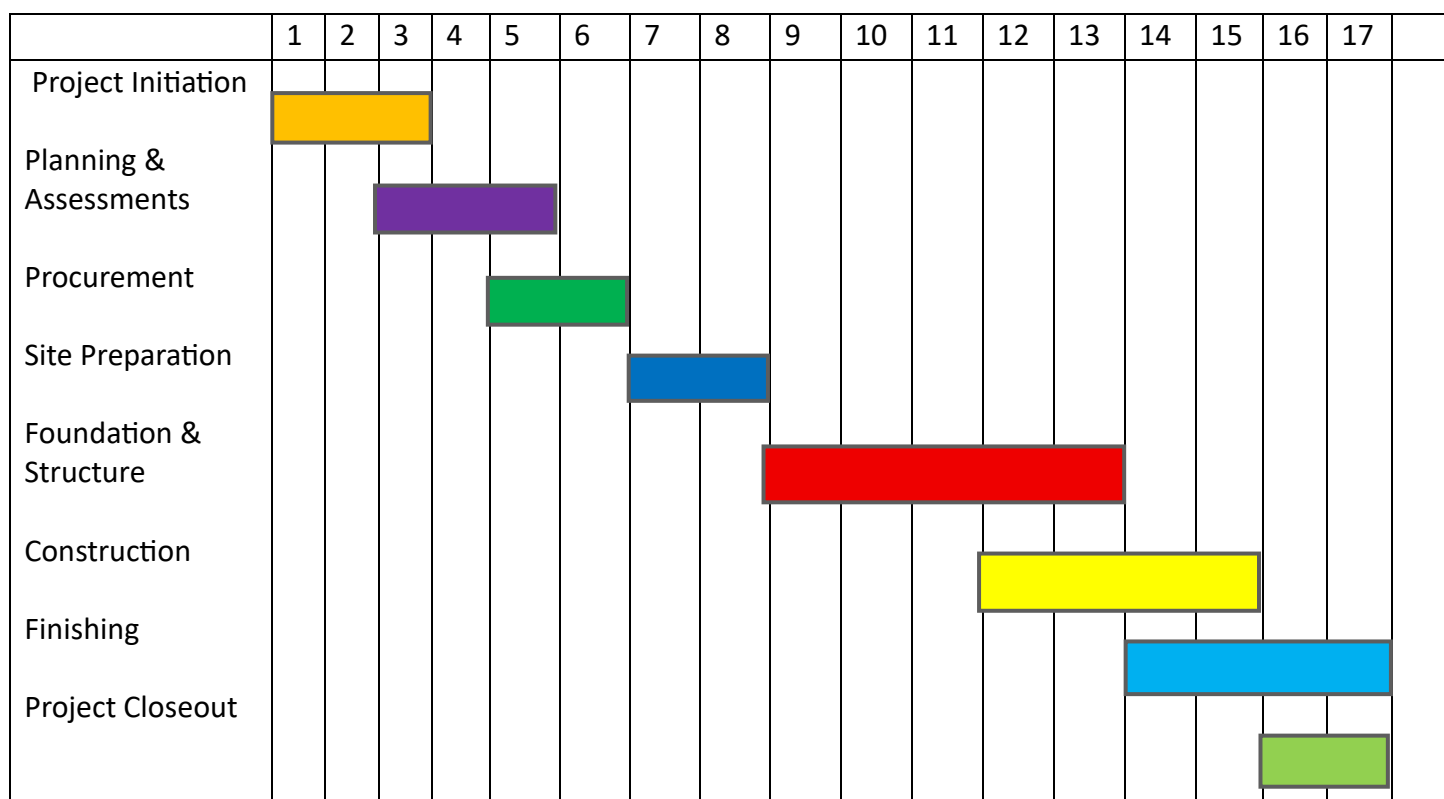
The Quad Chart effect summarizes the school reconstruction project by presenting its core elements in four structured sections: Objectives, Stakeholders, Scope, and Risks/Mitigation. This concise layout enables stakeholders to quickly grasp the project's purpose and critical components. The objectives quadrant highlights the mission to rebuild a safe, sustainable, and accessible school that promotes learning and community resilience.

The Stakeholders quadrant clearly identifies the Ministry of Education, project manager, construction, contractor, and local community, outlining their respective roles and responsibilities. In the Scope quadrant, the chart lists major deliverables such as site remediation, a new two-story building, support infrastructure, and sustainable features like solar panels and green areas. The Risks/Mitigation section acknowledges potential challenges weather delays, supply chain issues, budgetary concerns, and labour demands, while proposing practical mitigation strategies. By presenting essential project information in a compact visual format, the Quad Chart supports efficient communication and informed decision making among all involved parties.



GANTT CHART

Rebuild Primary School



The Gantt Chart outlines the overall timeline for rebuilding the new school, clearly illustrating the sequence and duration of each project phase. It begins with the Design and Approvals stage, running from March to August, which includes developing architectural plans, obtaining permits, and coordinating with permits, and coordinating with regulatory bodies. Following this, Site preparation occurs between September and November, covering site remediation, clearing debris from the food, stabilizing the land, and raising the foundation to improve flood resilience.

The largest portion of the timeline is allocated to Construction, spanning from December to July, reflecting the complexity of building a two-story, 5,000 m² facility, installing utilities, and integrating sustainable features such as solar panels and rainwater harvesting systems. The project concludes with the Handover phase in August, during which final inspections are completed, the building is certified for occupancy, and the school is officially transferred to the local community and Ministry of Education.

STAKEHOLDERS INVOLVEMENT

Rebuilding a school affects far more than just the construction team, so a clear plan for stakeholder involvement keeps the project aligned with community needs and prevents avoidable delays.

Ministry of Education

Acts the project sponsor. They provide funding, approve major decisions, and ensure the project meets provincial education and safety standards. They also receive regular progress reports and sign off on all design and construction milestones.

Project Manager

Responsible for the day-to-day coordination of the entire project. This includes planning, budgeting, communication, risk management, and making sure the project meets its schedule.

Architects and Engineers

Develop the architectural and structural designs, talking into account flood-resistant standards. They also collaborate with inspectors at key phases such as foundation completion, structural framing, electrical installation, and mechanical work.

Construction Contractor

Manages the construction workforce, equipment, and daily build activities. They follow the technical specifications provided by the design team and complete the work in phases.

Local Community Parents

The school is built for them, so their input matters. They are involved through community, meetings, updates, and surveys to ensure the new school meets both educational and accessibility needs. They are also notified in advance of any construction activities that may affect traffic, noise, or safety.

School Staff and Administration

They carry out mandatory inspections at different construction stages. Their approval is required before moving to the next phase.

ALLOCATION OF RESOURCES

To keep the project running smoothly, the plan divides resources into three major areas: people, materials, and equipment.

Human Resources

- Project manager
- Architects and structural engineers
- Site engineer
- Skilled construction worker (carpenters, electricians, plumbers, concrete specialists)
- Health and safety officer
- Administrative support
- Environmental specialist (for flood-resilience and drainage compliance)

Material Resources

- Concrete, steel, treated timber, insulation
- Reinforced flood-resistant foundation materials
- Solar panel systems
- Electrical and plumbing systems
- Roofing materials and waterproof membranes
- Classroom furniture and fixtures
- Safety barriers and temporary fencing

Equipment

- Excavators and bulldozers
- Cranes and loaders
- Power tools and generators
- Concrete mixers
- Site storage units
- Water pumps (for controlling high groundwater during construction)

FINANCIAL RESOURCES

The primary school rebuilding project budget is set up to cover every important facet of planning, building, and commissioning:

Construction: A total of \$16 million was set aside to construct the two-story, 5,000-square-meter school, including utilities, classrooms, foundations, and structural components.

Equipment: \$2 million for technology, recreational equipment, library shelves, and classroom furnishings.

Mechanical, Electrical, and Plumbing Systems: \$3 million will be used to install and test energy-saving devices such solar panels as well as HVAC, water, and electrical systems.

Project Management & Design: \$1.5 million for design approvals, project supervision, and architectural and engineering expenses.

Site Preparation: \$4 million for site remediation, flood-resilient foundation construction, and landscaping.

Contingency Funds: \$1.5 million set aside to pay for unanticipated expenses like extra safety precautions, supply chain delays, or design changes.

Monthly cost tracking, using several contractors to maintain competitive pricing, and local sourcing techniques to reduce supply risks are examples of financial management techniques. These allotments guarantee that every facet of the project is sufficiently funded while offering flexibility to handle any unforeseen costs that may emerge during development.

RISK ANALYSIS

To guarantee that the project is completed safely, on schedule, and within budget, the reconstruction of the elementary school requires thorough risk management. A thorough examination of possible hazards, their effects, likelihood, and mitigation techniques including residual risk management is given in this section.

Risk Types and Reduction

1. Environmental Risks

- Frequent severe weather or flooding: high probability, high impact. Elevated foundations, improved drainage, and planning important projects for ideal weather are examples of mitigation. Temporary protection structures and flexible schedules are examples of contingency plans.
- Erosion or soil contamination: High impact, medium chance. Soil remediation, professional contractor engagement, and geotechnical and environmental studies are examples of mitigation.

2. Technical and Construction Risks

- Unexpected structural problems: medium probability, high impact. Engineering supervision, staged construction inspections, and thorough site surveys are all part of mitigation.
- Supply Chain Delays: High impact, medium probability. Early procurement, a variety of vendors, and different product requirements are examples of mitigation techniques.

3. Financial Risks

- Budget Overruns: High impact, medium probability. Detailed cost estimation, frequent financial monitoring, contingency funds (7–12%), and controlled change management are all examples of mitigation.

4. Risks to Stakeholders

- Permit or approval delays: Medium impact, low probability. Early interaction with authorities, thorough documentation, and parallel work planning are examples of mitigation.
- Community or Stakeholder Conflicts: Medium impact, low probability. Transparent communication, public consultation, and grievance procedures are all part of mitigation.
- Scope creep: medium impact, medium possibility. Impact analysis, project board approval, and a rigorous change control procedure are all components of mitigation.

5. Health & Safety Risks

- On-Site Accidents: High impact, medium likelihood. PPE enforcement, toolbox talks, safety audits, emergency response protocols, and safety training are all examples of mitigation.
- Labour shortages or problems with contractor performance: medium impact, medium possibility. Pre-qualification of contractors, performance monitoring, and subcontractor pooling are examples of mitigation.

Risk Tracking and Reporting

- Keep an active risk register that is evaluated monthly by the project board and updated every week.
- To guarantee prompt remediation, escalate high-priority hazards right away.
- Throughout the project, record lessons learnt and modify mitigating techniques.

Residual Risk:

Following the implementation of mitigation strategies, residual risks are evaluated. Moderate risks are constantly assessed, but high residual risks need sponsor approval. This strong strategy guarantees proactive risk management, lowering uncertainty, protecting resources, and raising the possibility of a resilient, safe, and effective school restoration project.

CONCLUSION

Rebuilding a primary school following the 2022 floods in British Columbia is more than just a physical project; it is an essential component of re-establishing communal life following a significant calamity. When families want to restore stability, routine, and safety, schools are frequently among the first public places they turn to. This project management strategy ensures that the new facility is stronger, safer, and better equipped to handle future occurrences while providing the impacted community with that crucial service in a clear and organised manner.

The plan combines the essential elements of a successful reconstruction project, including a clear understanding of stakeholder roles, a realistic timeframe, a precise work breakdown structure, and a well-defined scope. These components aid in coordinating the work of the project team and ensuring that choices remain in line with the project's objectives. A useful framework for managing time, people, and materials while lowering the possibility of delays or cost overruns is provided by the Gantt chart and resource allocation approach.

Resilience is one of the project's main priorities. In addition to replacing what was damaged, the school will be updated to comply with contemporary safety regulations and endure more severe weather. The building's design incorporates the lessons learnt from the flood, making it more capable of safeguarding employees and students in the future. By spotting possible problems early on and describing strategies to lessen their effects, the risk analysis offers further assistance.

Throughout the process, community involvement is crucial. The project gains from a variety of viewpoints and fosters trust among stakeholders by involving government representatives, engineers, educators, families, and locals.

All things considered, this concept provides a workable and forward-thinking framework for reconstructing the elementary school. The project can aid in the restoration of vital services, promote community rehabilitation, and enhance long-term readiness with meticulous planning, excellent coordination, and a dedication to resilience.

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