



**Module: Project Management LCL
M5003_LON**

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Part A- Project proposal poster

'Reconstruction and modernisation of local municipal infrastructure in Worcester following the catastrophic floods of 2025'



IRACI MATRIX

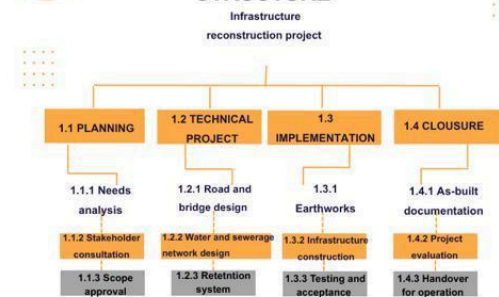
TASK / STAGE	City Council	Environment Agency	Contractors	Residents/Businesses	Emergency Services	Utility Providers
1. Damage analysis	A	R	C	I	C	I
2. Risk assessment	A	R	C	I	R	I
3. Stakeholder identifier	R	C	I	C	I	I
4. Technical design	C	C	R	I	I	C
5. Permits and agreements	A	R	C	I	I	C
6. Schedule and budget	A	C	R	I	I	I
7. Road reconstruction	I	C	R	I	I	I
8. Network repair	I	C	R	I	I	R
9. Sewerage modernisation	I	C	R	I	I	R
10. Final tests	C	C	R	I	R	C
11. Acceptance and handover	A	C	R	I	C	I
12. Final report and evaluation	A	C	R	C	C	I

R = Responsible A = Accountable C = Consulted I = Inform

QUAD CHART



WORK BREAKDOWN STRUCTURE

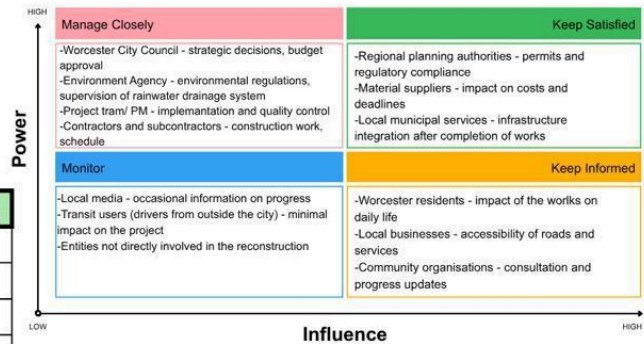


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INTRODUCTION

The project concerns the reconstruction and modernisation of local municipal infrastructure in Worcester, which was severely damaged during the floods of July 2025. Heavy rainfall led to breaches in the Severn River embankments, causing flooding of roads, bridges, water and sewerage networks, and street lighting (Environment Agency, 2025). The aim of the project is to restore the infrastructure to full functionality and increase its resilience to future extreme weather events through the use of modern and sustainable engineering solutions (UNDRR, 2022). The project is based on the 'build back better' principle, which means rebuilding in a more resilient and sustainable manner (Smith, 2023). Implementation will be carried out in accordance with good project management practices, taking into account risk analysis, the schedule and the involvement of key stakeholders (PMI, 2021).

STAKEHOLDER ANALYSIS



Gantt Chart

Infrastructure Reconstruction in Worcester



Risk Assessment Table

ID	Hazard	Probability	Impact	Risk Level	Mitigation Measures
R1	Heavy rain / secondary flooding	High	High	Critical	Retention systems; Cooperation with the Environment Agency
R2	Delays in material deliveries	Medium	Medium	Moderate	Time buffer; Alternative suppliers
R3	Lack of administrative approval	Low	High	High	Early agreements; Complete documentation
R4	Conflict with stakeholders	Medium	Medium	Moderate	Public consultation; RACI matrix
R5	Construction equipment failure	Medium	Medium	Moderate	Backup service; Contracts with external companies
R6	Labour shortage	Low	High	High	Workforce planning; Cooperation with subcontractors

CONCLUSION

The infrastructure reconstruction project in Worcester was planned using key project management tools, which enabled the effective identification of risks, stakeholders and priorities (PMI, 2021). The methods employed support the implementation of reconstruction in line with the 'build back better' principle, strengthening the city's resilience to future climate risks (UNDRR, 2022). The project also remains fully compliant with national guidelines on flood planning and response, which enhances its feasibility and sustainability (UK Government, 2023). All these measures lead to the creation of a more modern and resilient infrastructure, better prepared for future challenges.

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Part B: Reflection on Feedback

This reflection is framed based on Kolb Experiential Learning Cycle that comprises four steps, including concrete experience, reflective observation, abstract conceptualisation and active experimentation (Kolb, 1984). This model offers a simple model of analysing feedback and using learning to enhance future performance. It is also still popular in higher education to aid critical reflection and professional growth (Morris, 2020).

The tangible experience relates to the poster presentation of the proposed infrastructure reconstruction project of Worcester after the floods in 2025. This project was aimed to regenerate roads, drainage systems and sewage infrastructure, and use the principle of Build Back Better to enhance long-term resiliency. Both the tutor and peer feedback showed that the project idea was relevant and well connected with the scenario. The utilization of such tools as the Gantt chart, RACI matrix, and risk analysis were also taken well, since it showed knowledge of the most important project management methods and their implementation in practice.

Reflective observation helped to realize that despite the logical structure of the project, a significant part of the material was not profound and critical. Feedback indicated that although tools were given, there was little clarification of the rationale behind major choices like time allocation, budget distribution, and sequencing the tasks. As an illustration, the Gantt chart provided the project implementation but failed to substantiate the time required to complete the activities or clarify the relationship of activities in any way. This diminished the general coherence and power of the proposal, since the decisions were not completely backed by the evidence or theory.

The stage of abstract conceptualisation is observed where it is understood that project management should not be done with the help of tools only but with the capacity to support the decisions with theoretical knowledge. The feedback highlighted the need to connect the practical aspects with the known project management principles. Also, the analysis was undermined by a lack of academic literature, which suggests that one should be more critical in working with the sources that are relevant and credible to substantiate the major arguments and decisions.

The last phase, active experimentation, is concentrated on putting these insights into bettering the final project plan. In the new plan, the scheduling decisions will be more justified as they will include describing how tasks depend on each other and how much time it is expected to take. The academic literature will be better incorporated, which will enhance the theoretical

basis of the work. Justification of stakeholder positions will be added to the stakeholder analysis, and the risk analysis will have more detailed explanations behind the probability and impact ratings. Such enhancements will guarantee a more critical, organized and academically sound project management plan.

PART C – PROJECT MANAGEMENT PLAN

1. Introduction

The flood crisis in Worcester in July 2025 due to overflowing of the River Severn after several days of heavy rainfall resulted in massive destruction of municipal infrastructure in the area. A large-scale impact was on roads, drainage systems, sewage networks, street lighting, etc which hampered both important services and economic activity. Response In reply, this project is aimed at rebuilding and modernising infrastructure based on the principle of the “Build Back Better” that puts more emphasis on strengthening against future climate-change events as opposed to merely returning to the past.

The uncertainty, time constraints, and coordination of various stakeholders during pressure are what make disaster recovery projects especially complicated. This complexity has the potential to raise the chances of delays, cost overruns, and ineffective results when not managed appropriately. Thus, systematic planning, coordination and control are necessary, which can be accomplished through a structured approach of project management. Established methodologies offer a model on how to deal with conflicting priorities and deliver projects successfully in high-stakes settings (Kerzner, 2022).

2. Project Description

This project will focus on rebuilding the local municipal infrastructure in Worcester and its modernisation after the 2025 floods, as well as improving its resilience to future extreme weather events. The project, instead of being a mere replacement of damaged properties, is long-term in nature and incorporates sustainability and resiliency in the infrastructure development and delivery.

To accomplish this purpose, there are various SMART objectives that are set. First, repair the entire functionality of the critical infrastructure, such as roads, bridges, drainage, and sewage systems within a period of 24 weeks. Second, enhance flood resilience by improving drainage capacity and installing protective measures to minimize risk in the future. Third, to implement the principle of Building Better of the better to use sustainable material and better

engineering standards. The objectives are measurable, relevant to the context of flood recovery, specific and can be achieved within the provided budget.

The most important of the deliverables involve rebuilding of transport routes, modernisation of drainage and sewage systems, and testing and commissioning of the infrastructure so that they are safe to operate. The success of the project will be quantified by less flood risk, increased infrastructure resilience, and positive stakeholder responses, as well as signs of local economic revival.

It is a necessary project because the recovery of infrastructure is highly related to economic stability, safety of the community, and long-term resilience or urban stability. Multi-faceted post-disaster reconstruction helps to rebuild not only services but also minimizes the susceptibility to further risks associated with climate change, which become more frequent and severe (UNDRR, 2022). In addition, the resilient infrastructure investment has been revealed to create economic advantages, such as less recovery and reduced disruption over time (World Bank, 2021). The climate adaptability plans in the urban systems are also sustained by the sustainable reconstruction (IPCC, 2021).

3. Scope

This project will start with the scope of the project explaining the limits within which the reconstruction and modernisation of the infrastructure in Worcester shall be provided after floods in the year 2025. The scope is of vital importance in complex infrastructure projects since it guarantees spelling out of objectives, resources, and anticipated results.

The in-scope actions involve rebuilding of damaged road networks, modernisation of drainage system and sewage systems and providing superior rain covers. These factors can directly respond to the infrastructural failures found in the flood-impacted regions and contribute to the purpose of the project to enhance long-term resilience. The project concentrates on some of the most important assets related to economic recovery and the security of the population by targeting critical transport and water management systems.

Other activities excluded in the scope are housing reconstruction and emergency response interventions, which are covered in other recovery programmes. To avoid ambiguity and focus on deliverables that can be efficiently handled within the project time and budget, it is important to define these exclusions.

A committed budget of £4.2 million and a delivery schedule of 24 weeks are some of the major constraints of the project. Among the assumptions, there will be funding and availability of skilled contractors and both will be the base of the successful implementation.

As a control mechanism, it will have a formal change management process that will evaluate and accept any change in scope.

The uncontrolled scope expansion or scope creep has been commonly identified as one of the leading causes of cost overruns and schedule delays in infrastructure projects (Project Management Institute, 2021). Hence, scope control must be stringent to make sure that project goals are met within stipulated limits.

4. Work Breakdown Structure

Work Breakdown Structure (WBS) gives a hierarchical structure of the organisation of the project into manageable units to enable clarity in project planning and execution. In the project, the WBS will be divided into four key phases, namely, planning, technical design, implementation, and closure. This gradual process is an indication of a rational process of assessment to the end delivery and assessment.

In these phases, the tasks are further broken down into a set of specific activities, such as needs analysis, road design, development of sewer system, earthworks, testing. This organized disaggregation enables the complicated infrastructure tasks to be broken down into smaller and more manageable components and enhances coordination and accountability throughout the project team. Dependencies in sequencing of tasks include the practical dependencies whereby design should be done first before construction and testing should be done after implementation to determine quality and functionality.

WBS has the benefit of aiding project control because it ensures that both the deliverables and responsibilities are clearly defined, hence efficient scheduling and allocation of resources. It minimizes ambiguity as well, allowing the progress to be better tracked. Nevertheless, one major weakness is that the WBS can be oversimplified in terms of their relational connections amongst tasks especially in dynamic settings where interdependencies and external influences can influence the performance. According to Meredith et al. (2021), even though WBS is necessary to organize projects, it should be supplemented with other tools to ensure successful handling of project complexity.

5. Quad Chart

Quad Chart recaps the most important constraints of the project over time, cost, scope, and quality to facilitate the decision-making process. The 24-week timeframe is viewed as realistic since it outlines infrastructure recovery, instead of redeveloping the whole city. The sequencing, which will be done in phases, starting with assessment, to testing, enables rational sequencing and effective delivery within a manageable time frame. Infrastructure

projects are time sensitive because time delays will massively impact the cost and trust of stakeholders (Lock, 2020).

Its project budget will be pegged at an amount of £4.2 million with a 15 per cent Contingency to absorb unpredictable factors like weather delays, supply delays and equipment failure. The introduction of contingency is also crucial in post-disaster projects, in which risks are less foreseeable, and circumstances may vary swiftly. A good cost planning would enable the adequate provision of financial resources that would not affect the continuity of the project at the expense of the objectives (APM, 2022).

The scope of the project is to provide major infrastructure deliverables, such as roads, bridges, drainage, sewage systems, rain protection features, and the quality will be based on durability and resistance to flooding. There is a trade-off between quality, time and cost which is critical. Decreased project delivery time can lead to higher costs due to extra labour or rush materials, whereas higher standards of quality can push the timeline later. These trade-offs must be managed to balance the competing priorities and attain the overall project success (Turner, 2020).

6. Gantt Chart

Gantt chart is a visual representation of the project schedule, which shows the important stages and timeframes of each stage. The project has an assessment of damages (weeks 127), technical design (weeks 3610), construction (weeks 722), and final testing and commissioning (weeks 2324). This is a chronological order, which is logically planned and executed to make sure every step is carried out in a systematic way. Gantt charts and other effective scheduling tools are popular to enhance time management and coordination in construction projects (Kerzner, 2022).

Tasks dependencies are vital in this schedule. Construction works are based on the completion of the design stage, and testing will be possible only when all the implementation work is completed. The most time-consuming stage is the construction stage which involves the work of physical infrastructure such as earthworks, installation and integration of the system. This stage also constitutes a part of the critical path of the project hence delays will directly affect the time of overall completion. Nevertheless, one of the major weaknesses associated with Gantt charts is that they are not an effective tool of consideration of uncertainty or sudden interruptions, which are typical in post-disaster settings (Heagney, 2021).

7. Stakeholder Analysis

Successful implementation of infrastructure projects requires good management of the stakeholders, and this is especially true in post-disaster situations where various interests must be addressed. The stakeholders in this project are the City Council, the Environment Agency, contractors, the residents, and the local businesses. These stakeholders differ in terms of their influence and interest, which needs to be structured to achieve correct engagement at every phase of the project lifecycle (Eskerod and Jepsen, 2021).

The power-interest matrix is used to classify the stakeholders to inform management strategies. The City Council is categorized as high power and high interest, in that it gives funding, approvals and strategic pathway. The environment agency also has a lot of power owing to its regulation in flood management. Contractors are put in a high-power position but less interested in strategic results because they are most concerned with delivering projects. The high interest stakeholders are residents and local businesses since they are directly impacted by disruptions and project outcomes, though their authority to make decisions is relatively lower. The classification can be used to prioritize engagement efforts (Bourne, 2020).

Targeted engagement strategies are required for each group. Close management of high-power stakeholders via regular meetings and progress reports should be applied and residents and businesses kept informed via consultations and open communication lines. Nonetheless, there can be contradictions, especially when it comes to the cost and the necessity to ensure that the community is not disrupted. To balance between these competing priorities, it is necessary to negotiate carefully and make decisions transparently to retain the trust of stakeholders and be able to stay aligned with the project (Walker, 2021).

8. Resource Allocation

The proper distribution of the resources is necessary to make sure that the project is implemented effectively and within the limits of the project. The project will need the involvement of human, financial and material resources to aid in the reconstruction and modernisation of the infrastructure. The human resources consist of engineers, contractors, and a project manager with a specific role in designing, planning, and executing the project. Role allocation enhances coordination and accountability, which is essential in complicated infrastructural projects (PMI, 2021).

The project has a fixed budget of 4.2 million, its financial resource, which should be properly budgeted to all the project stages, which include the design, construction and testing. Material

resources involve construction equipment and raw materials needed in roadworks, drainage systems, and structural improvements. Such resources must be distributed according to the priorities of the project, and crucial activities, like construction and installation of systems must be provided with adequate resources. Strategic allocation assists in maximising the efficiency through eliminating the delays and preventing the shortages in resources (Fewings and Henjewe, 2019).

One of the main limitations is the possible labour shortages that can influence the timelines and productivity of the projects. To reduce this risk, the resources should be scheduled in advance, back-up contractors or flexible scheduling should be used. Effective resource management does not only enhance the efficiency but also makes it less likely to face delays and cost overrun, which is part of the project success (Kerzner, 2022).

9. Risk Analysis

This project must include risk management because of uncertainties and dynamism of post-flood environments. Some of the risks that have been identified are heavy rainfall, material delays, approval delays, conflict of stakeholders, failure of equipment, and shortage of labour. The risks are evaluated depending on the likelihood and possible effects of each risk on the project goals. It is a formalised method that allows ranking risks to deal with the most important ones in advance, to reduce the impact (Hillson and Murray-Webster, 2020).

Severe risk is rated based on its high probability and its devastating effects on the construction activities since the project is directly exposed to flood prone conditions. On the contrary, other risks, like material and approval delays, are rated as moderate because they are easier to predict and can be controlled by planning and coordination. The disruption of the supply chain may be addressed, such as by setting early procurement strategies in response to supply chain disruptions, and by applying effective stakeholder communication, such as in case of delays in approval. This distinction secures that resources are also prioritized on the greatest threats to project delivery (Chapman and Ward, 2022).

Mitigation plans are followed to minimize the risk occurrence and effects. These are utilisation of retention systems to handle surplus water, alternative suppliers that will handle material shortages, transparent documentation procedures to reduce delays in approval, and backup equipment to reduce operational delays. Nevertheless, one of the major weaknesses of risk management is that the external uncertainties, especially weather conditions and behaviour of the stakeholders cannot be fully anticipated. This makes the project have a flexible and adaptive nature to be able to react to unplanned challenges (Aven, 2021).

10. Conclusion

This project management plan has described how the infrastructure in Worcester is going to be restored and improved after the 2025 floods. Among the essential aspects, such as scope definition, resource allocation, scheduling, and risk management, reveal how the project can be facilitated successfully within its limitations. I believe that the plan would be a viable project since it has a realistic schedule, a clear budget, and it has applied already existing project management techniques. Notably, the emphasis on resilience and the principle of Build Back Better ensures that the project would not only help respond to immediate damage but would also help in the long-term of the project and diminished susceptibility to the future risks because of the climate.

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