

Introduction

In July 2025, there was a serious flooding in the West Midlands, which left the infrastructure of Worcester in a very destructive state. The River Severn overtopped its defenses which affected roads, drainage systems, footpaths, utility access points and community facilities. The destruction interfered with transportation, undermined the security of the population, disrupted the local services, and influenced the economic activity. There must be a carefully coordinated reconstruction exercise to rebuild infrastructure and create resilience to future floods.

Objective

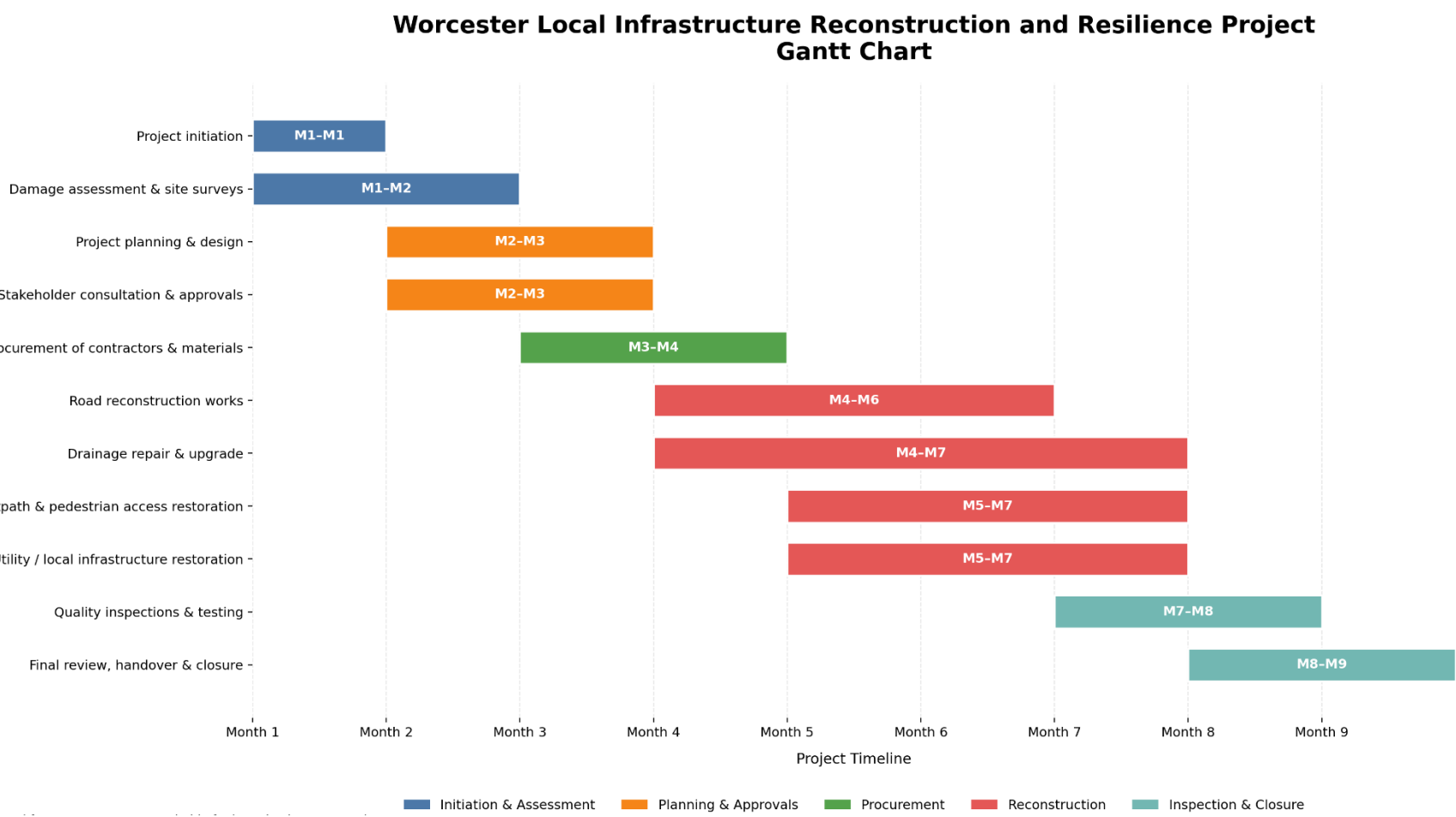
- Repair damaged roads, drainage, footpath and other necessary public infrastructure.
- Restore secure access of residents, businesses, and emergency services.
- Enhance strength by using enhanced materials and improved drainage treatment.
- Complete the project within the agreed cost, time and quality constraints.
- Involve stakeholders in the lifecycle of the project.

Project Scope

- Infrastructure damage measurement.
- local roads and pedestrian pathways repair.
- Drainage systems rehabilitation and renovation.
- Repair of community and access roads and selected community infrastructure.
- Construction materials that are flood resistant.
- Stakeholder monitoring and communication.

Key Deliverables

- Reopened and fixed local roads.
- Reinstated footways and walking access ways.
- Remodeled surface water and drainage systems.
- Better access to vital state services.
- Infrastructure enhancement against floods.
- Final inspection and project handover report.



Proposed Solution

Benefits

- It reinstates movement and accessibility.
- It helps in recovery of communities and business.
- It enhances resilience to flooding in the future.
- It enhances public safety.

Constraints

- The project will be forced to deal with a small budget.
- One of the major constraints is time pressure.
- The weather issue is a significant challenge.
- There is the challenge of complex stakeholder coordination.



Conclusion

My proposal is Worcester Local Infrastructure Reconstruction and Resilience Project, which will provide a viable solution to the destruction inflicted by the floods of July 2025. This project will rebuild necessary local infrastructures, enhance future resilience, and manage risks, stakeholders, and resources strategically by planning, leading to the restoration of essential local infrastructure.

Reference List

1. Bi, W., MacAskill, K. and Schooling, J. (2023) 'Old wine in new bottles? Understanding infrastructure resilience: Foundations, assessment, and limitations,' Transportation Research Part D Transport and Environment, 120, p. 103793. <https://doi.org/10.1016/j.trd.2023.103793>.
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A PROJECT PORTFOLIO

Worcester Local Infrastructure Reconstruction and Resilience Project

Module: Project Management

Module Code: LCLM5003

Programme: BA (Hons) Leadership and Management Skills in the Workplace

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PART B: REFLECTION ON FEEDBACK RECEIVED

The poster presentation that took place during Week 6 was a valuable experience to share the Worcester Local Infrastructure Reconstruction and Resilience Project with the module tutor and other students. The feedback gained in that session provided a clear understanding of what had been successfully done and what had to be changed in the final project management plan. This reflection will be an answer to that feedback and discusses the exact changes that have been done in Part C to cover the concerns brought up.

The selection of the July 2025 West Midlands flooding as the trigger event was perceived to be relevant and highly contextualised. Priorities to re-establish infrastructures, particularly roads, drainage systems, footways, and community points of access, were identified as a realistic and reasonably scoped project option. The Gantt Chart incorporated in the poster was also commended as an effective scheduling tool that depicted the sequence of project stages commencing with assessment, to handover. The peers mentioned that the section on benefits and key deliverables was user-friendly and explained the value of the project in a simple manner.

However, there were also four significant gaps that were identified in the feedback. The first and the most important was the lack of a RACI matrix. When a project involves several teams, government agencies, contractors, and community stakeholders, it is imperative that each task and its ultimate responsibility be clearly assigned, those who must be consulted prior to decisions being made, and those who need to be informed be kept informed. The poster identified stakeholder groups broadly without giving a particular role to any of the activities. This has been comprehensively dealt with in Part C in the form of a comprehensive RACI table, which cross tabulates all significant project tasks with the major stakeholder roles.

The risk analysis was another area of concern that was weak. The time pressure and weather, budget constraints, and the stakeholder coordination issues were also stated in the constraints section of the poster but in general terms without the proper assessment of risks. To make a risk analysis useful, all risks must be assessed based on their probability of occurrence, the extent of potential impact to the

project, and the precautionary measures that will be taken to minimize the probability of its occurrence or the extent of impact should the risk occur. Part C deals with this by providing a complete risk register table which includes six major risks and the likelihood and impact rating of each risk and the mitigation strategies of these risks are also provided. Despite the poster listing stakeholder monitoring and communication as an activity, no stakeholder analysis was provided. Part C deals with this by offering a power and interest analysis of all major stakeholder groups and a planned communication plan in terms of the particular needs of each group.

Lastly, the tutor noted that there was no Work Breakdown Structure (WBS) as an important omission. A WBS divides the whole project into manageable stages and activities, allocates ownership, and gives the rational basis on the basis of which the scheduling, allocation of resources and monitoring of performance are conducted.

PART C: PROJECT MANAGEMENT PLAN

Worcester Local Infrastructure Reconstruction and Resilience Project

1. Introduction

The Worcester Local Infrastructure Reconstruction and Resilience Project (WLIRRP) was developed due to the devastating floods that hit the West Midlands in July 2025. The River Severn overpowered its defences at various points leading to extensive damage of roads, drainage systems, foot paths and access points to utilities throughout Worcester. The destruction caused transport infrastructure, and posed a threat to people, as well as destabilising the local economy (Puri, Elkhartboutly and Ali, 2024). This project management plan identifies a timetabled set of actions to be taken to restore vital infrastructure and increase the city resilience to future flooding.

Successful reconstruction after a disaster requires strict implementation of the principles of project management. Kerzner (2022) argues that to achieve a successful delivery of projects, scope, time, cost, and quality delivery need to be diligently considered and incorporated into a well-defined governance framework. This plan is based on proven project management techniques, such as those promoted by the Project Management Institute (2021) and the Chartered Institute of Building (2014) to inform the planning and implementation of the reconstruction works. The plan encompasses all stages between project start-up and final delivery and closure and has a nine months delivery schedule.

2. Project Description

The WLIRRP is a publicly funded infrastructure rebuilding initiative that was commissioned by the city of Worcester. The project deals with the destruction by the July 2025 floods, which hit roads, drainage systems, pedestrian walkways and utility entry points throughout the city. The main objective is to re-establish safe and functional infrastructure and add flood-resistant design enhancements to mitigate the susceptibility to future incidences (Bi, MacAskill and Schooling, 2023).

The project is guided by a experienced project manager with the assistance of civil engineers, site managers, and special contractors. It is provided based on the Construction (Design and Management)

Regulations 2015 and other British Standards. The funding is attracted through council emergency reserves and government disaster recovery grants. The project will last between Month 1 (M1) and Month 9 (M9) with the construction works being concentrated between M4 and M7. The success of the project will be gauged on three major constraints, namely; accomplish all works within the agreed budget, the nine-month schedule, and achieving the set quality standards as checked via inspections in M7 and M8.

3. Scope

The project scope outlines the scope of work to be performed and makes sure that all activities are in line with the objectives of the project. The scopes of the following deliverables include:

Determining the extent of flood destruction in roads, drainage systems, footpaths and utility access points in Worcester.

1. Reconstruction and maintenance of local roads and key access roads damaged during the floods with flood resistant materials.
2. Repair and renovation of surface water drainage systems to enhance capacity and risk mitigate future flooding.
3. Reinstatement of pedestrian footways and access routes to the public to a pre-flood state or an improved one.
4. Revival of utility points and targeted community infrastructure.
5. Engagement, monitoring and communication of stakeholders during the lifecycle of the project. Final quality checks, project hand over report, and formal closure.

The subsequent are specifically out of scope: new road construction outside the affected areas, long term river defence works (to be addressed by the Environment Agency in isolation) and post defects liability period maintenance works. These omissions are aligned with the concepts of scope management discussed by Meredith and Mantel (2019) and state the necessity of having clear boundaries to avoid scope creep.

4. Work Breakdown Structure

The Work Breakdown Structure (WBS) breaks down the project into small manageable stages and activities. The WBS of the WLIRRP is given in Table 1 below. The phases are in line with the project schedule and are allocated to the responsible individuals as explained in the RACI matrix in Section 7.

Table 1: Work Breakdown Structure

Code	Phase	Key Activities
1.0	Project Initiation	1.1 Mobilise team 1.2 Define charter 1.3 Appoint PM
2.0	Damage Assessment	2.1 Site surveys 2.2 Structural inspections 2.3 Report
3.0	Planning & Design	3.1 Engineering design 3.2 Approvals 3.3 Budget plan
4.0	Procurement	4.1 Tender documents 4.2 Evaluate bids 4.3 Award contracts
5.0	Construction Works	5.1 Road repair 5.2 Drainage upgrade 5.3 Footpath restore 5.4 Utilities
6.0	Quality & Testing	6.1 Inspections 6.2 Safety checks 6.3 Sign-off
7.0	Closure	7.1 Final review 7.2 Handover 7.3 Lessons learned

This WBS reflects the hierarchical decomposition recommended by the PMBOK Guide (PMI, 2021), which states that breaking work into smaller components improves control and accountability throughout the project lifecycle.

Project initiation and Damage assessment

Project Initiation is the first step in the project, and it entails mobilizing the project team, formal project charter definition, and the appointment of the Project Manager. This pre-implementation stage is important to provide the governance structure in advance of technical implementation. After the initiation, the stage of Damage Assessment is essential in the process of establishing the overall damage of the flooding. This phase entails site surveys and structural assessment of roads, drainage and foot paths and finally comes up with a comprehensive assessment report which guides all other engineering decisions.

Planning, Design and Procurement.

After quantifying the damage, the Planning & Design phase follows. In this phase, civil engineers come up with designs and engineering specifications that are flood resistant and they seek approvals and complete the budget plan. This stage plays a crucial role in the realization of the project goal, which is to reduce the vulnerability of floods in the future. This is followed by the Procurement phase which entails the preparation of tender documents and evaluation of bids by specialist contractors. The phase ends with awarding of the contracts, which make sure that the appropriate resources are procured to undertake the intensive construction phase.

Construction, Quality and Closure.

The team of the program is the Construction Works stage, the core of which is dedicated to Month 4-7. They include re-constructing local roads using flood-resistant material, enhance the drainage systems on the surface water, and repair pedestrian footways and utility access points. The Quality and Testing stage will involve the rigorous checks and safety tests in Months 7 and 8 with the aim of ascertaining that everything has been completed to the UK standards. The project will also enter its Closure stage, comprising of final review, handover of the infrastructure to the city and a lesson learned session to improve future resilience programs.

5. Quad Chart

The Quad Chart is a macro overview of the four key project dimensions (scope, schedule, cost, and performance). It is a brief communication tool among the top stakeholders and decision-makers (Cabinet Office, 2009). The WLIRRP Quad Chart can be found in figure 1 below.

Figure 1: WLIRRP Quad Chart

SCOPE Repair roads, drainage, footpaths and utility access across Worcester flood-affected areas using flood-resilient materials.	SCHEDULE 9-month timeline (Month 1–9). Initiation in M1, construction M4–M7, closure by M9.
COST Constrained budget sourced from council emergency funds and government grants. Strict cost monitoring throughout.	PERFORMANCE All infrastructure meets UK standards. Quality inspections in M7–M8. Final handover report issued at closure.

6. Gantt Chart

Table 2 below shows the Gantt Chart of the scheduled work during the nine months project. Activities are categorized into phases and the time blocks show the months where activities are in operation. This gives a vivid graphical display of sequencing, concurrency and critical path activities (Kerzner, 2022).

Table 2: Project Gantt Chart (M = Month)

Activity	M1	M2	M3	M4	M5	M6	M7	M8	M9
Project Initiation	■								
Damage Assessment & Site Surveys	■	■							
Project Planning & Design		■	■						
Stakeholder Consultation & Approvals		■	■						
Procurement of Contractors			■	■					
Road Reconstruction Works				■	■	■			
Drainage Repair & Upgrade				■	■	■	■		
Footpath & Pedestrian Restoration					■	■	■		
Utility / Infrastructure Restoration					■	■	■		
Quality Inspections & Testing							■	■	
Final Review, Handover & Closure								■	■

The critical path flows through the damage assessment, planning and design, procurement, construction works and final inspections. Any stalling of these activities will have a direct impact on the project end date. There are buffer weeks between M3 and M4, and M7 and M8 to allow unexpected delays.

7. Stakeholders' Involvement

Effective project management entails stakeholder management. Bourne (2016) opines that an active involvement of stakeholders minimizes conflict, enhances decision making and raises the chances of project success. The WLIRRP will bring on board a wide array of stakeholders with different interests, influences, and project roles. The stakeholder analysis is given in Table 3.

Table 3: Stakeholder Analysis

Stakeholder	Interest / Influence	Role in Project	Engagement Strategy
Worcester City Council	High / High	Decision-making authority, budget approval, planning permissions	Regular progress meetings, formal reports
Residents & Community	High / Med	Direct impact on daily life, safety, and access	Community notices, public consultations
Contractors & Suppliers	High / High	Responsible for construction delivery and materials	Weekly site meetings, procurement updates
Environment Agency	Med / High	Flood regulation, environmental compliance	Formal reports, regulatory briefings
Emergency Services	High / Med	Access needs during construction for emergency response	Access route communications
Utility Providers	Med / High	Coordinate underground works and service reinstatement	Technical coordination meetings

The stakeholder engagement plan will be structured and will be applied since M1. Formal monthly progress reports will be made to the Worcester City Council and they will be attended by governance meetings. Public notices, a project site and community consultation events will be used to inform the community residents at the important milestones. Weekly site coordination meetings will be attended by contractors. Environmental compliance will be updated in the Environment Agency as per the regulations. The tiered approach will mean that the information is timely and relevant and provided to all stakeholders according to their degree of interest and influence.

RACI Matrix

Table 4 presents the RACI Matrix, which assigns responsibility for each major project activity. RACI stands for Responsible, Accountable, Consulted, and Informed (PMI, 2021). Clear role assignment prevents duplication of effort and ensures accountability across the project team.

Table 4: RACI Matrix

Activity	Project Manager	Engineers	Local Council	Community Reps	Contractors
Project Initiation	A/R	C	A	I	I
Damage Assessment	A	R	C	I	I
Planning & Design	A	R	C	C	I
Stakeholder Consultation	A	I	R	R	I
Procurement	A	C	A	I	R
Road Reconstruction	A	C	I	I	R
Drainage Repair	A	R	I	I	R
Quality Inspections	A	R	C	I	I
Final Handover	A/R	C	A	I	I

Key: R = Responsible, A = Accountable, C = Consulted, I = Informed

8. Allocation of Resources

Effective resource allocation ensures that the right people, equipment, and materials are available at the right time. Zwikaël and Smyrk (2019) emphasise that resource planning must be integrated with the project schedule to avoid bottlenecks and cost overruns. Table 5 below presents the resource allocation plan for the WLIRRP.

Table 5: Resource Allocation Plan

Resource	Quantity	Purpose	Project Phase
Civil Engineers	3 full-time	Design, surveys, QA oversight	M1–M9
Site Managers	2 full-time	Supervise construction activities on site	M3–M8
Specialist Contractors	As procured	Road, drainage and utility works	M3–M8
Project Manager	1 full-time	Overall coordination and stakeholder management	M1–M9
Administrative Support	1 part-time	Documentation, reporting, communications	M1–M9
Heavy Plant Equipment	Hired as needed	Excavation, paving, drainage installation	M4–M7
Flood-Resilient Materials	As per design spec	Road sub-base, drainage pipes, surfacing	M3–M7

Resources have been allocated to align with peak demand during the construction phase (M4–M7). The project manager and civil engineers are engaged for the full nine-month period to ensure continuity of oversight. Heavy plant equipment will be hired on a contract basis to minimise overhead costs during non-construction phases. Material procurement will be initiated in M3 to avoid supply chain delays once construction commences. A 10% budget contingency is retained throughout to cover unforeseen resource requirements.

9. Risk Analysis

The management of risks is part of effective completion of post-disaster reconstruction projects. According to Hillson (2017), project risk is any uncertainty event or situation that, when it arises, can positively or negatively impact project goals. As the WLIRRP is characterized by the need to work with severe weather, limited budgets, contractor performance, and ground conditions, the most common risks are related to the weather conditions, finances, contractor performance, and the ground conditions. The project risk register, including the likelihood, impact, risk level, and mitigation strategies, are given in Table 6 below.

Table 6: Risk Register

Risk	Description	Like-lihood	Impact	Level	Mitigation
Adverse Weather	Further rainfall delays construction activities, particularly earthworks and paving.	High	High	High	Monitor forecasts; include weather contingency weeks in schedule; use waterproof materials where possible.
Budget Overrun	Material price increases or unforeseen ground conditions inflate costs beyond allocation.	Med	High	High	Regular cost tracking; maintain a 10% contingency reserve; early re-tendering if needed.
Contractor Delays	Key contractors fail to mobilise or deliver on schedule, affecting critical path.	Med	High	Med	Include penalty clauses in contracts; pre-qualify contractors; maintain a shortlist of alternatives.
Stakeholder Conflict	Conflicting priorities between council, community and contractors cause decision delays.	Med	Med	Med	Structured stakeholder engagement plan; clear escalation procedures; regular communication.
Health & Safety Incidents	Site accidents injure workers or members of the public near active works.	Low	High	High	Enforce construction exclusion zones; daily toolbox talks; comply with CDM Regulations 2015.
Ground Condition Issues	Flood saturation has weakened sub-base, causing unexpected excavation depth.	Med	High	High	Conduct geotechnical surveys prior to construction; design with adequate sub-base tolerance.
Supply Chain Disruption	Shortage of flood-resistant materials delays procurement.	Low	Med	Low	Secure materials early; identify alternative suppliers before project start.

Colour key: Red = High risk, Amber = Medium risk, Green = Low risk

Risk register will be discussed at each monthly governance meeting and revised as the project moves forward. The manager of the project is mainly accountable to make sure that mitigation measures are taken and that the occurrence of risks is reported to Worcester City Council promptly. Infrastructure projects that will work in post-disaster environments, where conditions may change quickly, the Institution of Civil Engineers (2018) suggests that this should follow a continuous risk review cycle. This strategy will be embraced in the WLIRRP.

10. Conclusion

The Worcester Local Infrastructure Reconstruction and Resilience Project is an all-encompassing reaction to the destruction of the July 2025 flooding. This project management plan has detailed the major elements needed to bring the project to fruition, such as a well-defined scope, a work breakdown structure, a realistic nine-month plan that is represented in the Gantt Chart, a Quad Chart that will outline the important dimensions of the project, and a comprehensive stakeholder engagement plan supported by a RACI matrix. The risk register outlines 7 major risks and each has established mitigation measures to curtail its effect on the project delivery. The allocation of resources has been well considered to meet the needs of a certain construction phase, and a financial contingency has been kept to deal with unexpected expenses. These aspects create a strong platform to provide infrastructure recovery that not only recovers the roads, drainage, footpaths, and utilities in Worcester to the level before the floods, but also increases the resilience to the future floods (Bi, Schooling and MacAskill, 2024; Mushtaha et al., 2024). This plan, along with active stakeholder participation and frequent risk assessment, will ensure that the project is completed on schedule, within budget and to the desired quality standards. The WLIRRP will eventually ensure safe movement, re-establish community access, and be a part of the long-term resiliency of the infrastructure in Worcester.

11. References

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