



CHALLENGES FACED BY MAJOR PROJECTS: BUILDING RESILIENT WATER INFRASTRUCTURE

The water industry is facing an era of unprecedented challenges. Ageing municipal assets, climate change impacts, increasing community expectations, and complex regulatory requirements, have all shifted the dynamics of water infrastructure projects. At Sequana, our extensive experience in leading and delivering major, complex capital projects – along with the recovery of distressed projects – offers unique insights into what drives projects to success and what factors undermine outcomes.

This article shares some of the critical lessons we have learned and provides valuable guidance to agencies aiming to navigate the complexities of modern water infrastructure projects.

THE KEY TO PROJECT SUCCESS: INDEPENDENT EXPERTISE AND STRATEGIC GOVERNANCE

The performance of major water infrastructure projects is influenced by a multitude of factors, many of which lie within the control of delivering agencies. In short, there are many and varied reasons for the underperformance of projects, with a recurring theme being the absence of early, independent expert advice on project delivery and governance.

A common situation we experience is where a delivery agency initiates a major capital project which is scales of magnitude larger than their usual capital and renewal programs. Agencies commence the initiation and planning for the major project relying on their business-as-usual processes, internal resources, and engineering consultants, which often are not well suited to the step-change necessary to deliver the major project. By the time the agency recognises the major project is not progressing as intended, often falling behind schedule and with cost estimates rising uncontrollably, the project is in distress, stakeholders have lost confidence, and significantly more time and effort is needed to rectify the situation.

To ensure the success of project outcomes, agencies should identify early that business-as-usual practices are not well suited for major projects, and a bespoke delivery and governance arrangement is necessary. Agencies should involve professionals with hands-on experience in the delivery of major projects to assist in establishing the project management structure, a robust governance arrangement, and a well-equipped team. Taking these early steps is critical to improving the likelihood of achieving project objectives.

With ageing municipal assets and climate change considerations, there are now far more 'non-standard' projects or programs of works, which demand careful planning to address unique constraints around budget, size, timeframes, market dynamics and stakeholder engagement.

These major projects often arise from service needs tied to capital expenditure approval processes, such as submissions to economic regulatory bodies or business cases demonstrating value for money. However, delays or inefficiencies in these early stages can have long-term consequences, often necessitating costly recovery efforts to meet critical service deadlines.



UNIQUE CHALLENGES IN MODERN WATER PROJECTS

As with all capital projects, it is imperative that projects at commencement are well-founded and have a solid plan in place to meet all deliverable and milestone requirements, including the 'service need' end date. Projects which are delayed and frustrated in the early stages of formation are significantly more difficult to correct at a later date. Projects which incur early delays often require a 'stronger' delivery approach to achieve the end 'service' date on-time. And while there are varying terms used across the industry for rectifying 'frustrated' or 'distressed' projects, such as 'recovery', 'rehabilitation' and 'reset', these all come at a significant cost, particularly if meeting critical service need times are non-negotiable.

Our experience shows that there are several common issues that can arise in major projects.

INSUFFICIENT CAPITAL BUDGET SETTING AT PROJECT INCEPTION

Many projects face budget shortfalls because initial estimates are overly optimistic and set well before procurement begins without adequate designs.

Early-stage budgets often rely on conceptual frameworks – without the benefit of detailed designs - leaving little room for contingencies. With the passing of time, price risks emerge – such as inflation, unexpected events impacting commodity costs, and supply chain issues.

Common causes of budget increases include thorough investigation of the problem and required solution, which occurs during the development of the business case and design. Other common causes can include scope creep, approval delays, and changes to business operational requirements.

The materialisation of such risks can and often have significant impact on capital allowances.

These challenges can be mitigated, however, through the adoption of conservative budget estimates at inception which account for potential inflation and unforeseen risks (historical data can be used to ensure contingencies are realistic), and regular updates of cost estimates throughout project stages.

LACK OF UNDERSTANDING OF PROJECT COMPLEXITY AND DELIVERY NEEDS

Delivery agencies excel at managing and executing business-as-usual (BAU) infrastructure projects, where processes are well-established and predictable. However, when it comes to more unique and complex initiatives – those that deviate from standard frameworks or require specialised expertise – this is where there may be a deficiency in the depth of experience required, leading to suboptimal decision-making, with a lack of experienced strategic, technical, or commercial expertise to implement complex projects. This gap often necessitates bringing in external experts or specialised teams to ensure the success of such high-stakes, non-traditional projects. Failure to understand a project's complexity has implications for efficient delivery and outcomes. Therefore, the delivery model (internal and/or external resources) engaged *within* the business is initially more critical than the delivery model when seeking private sector involvement to design and build (and sometimes operate) the assets.

Assessing 'what is a complex project requiring special consideration' can be difficult, particularly if the delivery agency's management does not have experience in delivering such projects. Seeking external assurance is an approach that can assist management in assessing the capital delivery resource capability and capacity, as well as engaging external experts to complement internal resources – particularly in leadership and technical roles – to develop tailored delivery models that align with the unique needs of each project.



POOR GOVERNANCE ARRANGEMENTS FROM BUSINESS CASE THROUGH TO IMPLEMENTATION AND DELIVERY

Much like early robust budget setting, appropriate governance formation in early project delivery lifecycle is critical to successful project delivery. Many governance arrangements are put in place for complex projects which adapt a structure that is based on 'business as usual' and not cognisant of meeting project needs. Internal approving groups are often put in place without real thought as to how it can assist the Project Director and delivery team.

Good, effective governance empowers project teams. Poor governance slows decisions, creates barriers in delivery and distracts from what really matters.

Without exception, the most successful governance arrangements for major and complex projects utilise key internal stakeholders (such as select members from the Executive Leadership Team), alongside external experts who bring a wide market perspective and understanding to the project. Consideration should be given to the design of bespoke governance structures with a focus on project efficiency and decision-making agility – and ability – such as the establishment of a Project Control Group (PCG).

PCG's should support and enable the project, while providing confidence to the Board on key matters which require their decisions. Within the PCG, roles should be clearly defined, with responsibilities, and delegation authorities to minimise bureaucratic hurdles.

INEXPERIENCED LEADERSHIP

The absence of experienced major project leadership is another significant contributor to project distress. The key to understanding a project's complexity and delivery needs is ensuring the right leadership and team are in place at the earliest possible opportunity.

Oftentimes, agencies appoint a senior internal staff member into a leadership role for a major capital project, who may have a detailed appreciation for the business and its assets but may not have experience in establishing and delivering a project of such scale and complexity.

Without the right Project Director, the barriers to getting the best outcome can be issues of perceived budget constraints and internal personal goals that may not be aligned with 'best for project' outcomes. The selection of inexperienced key team members can lead to delivery outcomes that are far more costly, due to poor decision making. In the worst-case-scenario, the cost may not only be financial and time, but also reputational.

Prioritisation of the appointment of a skilled Project Director with experience in similar projects, as well as ensuring key team members possess the necessary technical, commercial, and leadership skills is vital to a project's success.



LACK OF UNDERSTANDING AROUND COMMUNITY AND STAKEHOLDER ENGAGEMENT NEEDS

It has become increasingly important to ensure community and stakeholder needs are understood from project inception, and that these needs are transferred to the project requirements when setting objectives and benefits. Late or inadequate stakeholder consultation frequently causes unforeseen hurdles during procurement and planning, which result in impacts to project time and cost. This can include reactive engagement of regulatory bodies, Traditional Owners, and community representatives. The acknowledgement of the importance of these stakeholders to the success of the project through the development of comprehensive engagement plans at the project's inception and the establishment of consultative committees goes a long way to mitigate risk and integrate and stakeholder requirements into project objectives from the outset.

INSUFFICIENT PROJECT PLANNING AND REPORTING

The development of robust and well-developed planning and reporting mechanisms throughout the various phases of a project set the way forward for the project. In many cases, not enough time is spent both on these plans and in consultation with internal stakeholders, to ensure the plan is accepted and supported within the business. Project management strategies and plans can be viewed as a 'tick a box' exercise, where in best practice, they set the foundational thinking and guiderails for the project.

Not only should these plans be agreed with management, but should also be endorsed within the project governing body (for example, the PCG), as they are critical for aligning stakeholders and maintaining project momentum. Many projects fail due to a lack of clear plans, insufficient consultation, and inadequate progress tracking. Establishing and monitoring progress against clear milestones with trackable metrics is one way of integrating and mitigating risk management frameworks to address emerging challenges proactively.

INEFFECTUAL PROCUREMENT PROCESS AND DELEGATION AUTHORITIES

Major projects need special consideration across many areas, and these should be documented in relevant project plans. Far too often, standard procurement processes and delegation authorities are adopted from business 'business as usual' policies, processes, and procedures, even though these business standards are not designed for the challenges faced in major projects and programs. This approach fails to accommodate the unique demands of major projects, with the misalignment leading to inefficiencies and delays in approvals.

When dealing with the complexities of major projects, procurement strategies should be customised for each project, taking into consideration factors like risk allocation and contract scalability and incorporating flexibility into procurement frameworks to adapt to the changing project conditions, while delegation processes should be simplified to empower project teams while maintaining accountability.



CASE STUDY: PROACTIVE PROJECT MANAGEMENT IN ACTION – THE LOWER MURRAY WATER SUNRAYSLIA WATER EFFICIENCY PROJECT

How successful governance and delivery arrangements set a project up for success, supporting the delivery on time, on budget, and with maximum benefit to stakeholders

At Sequana, we have assisted several Government agencies with the delivery of major projects. In our experience, this is most successful when external delivery professionals are engaged right from the start. Delivering major infrastructure projects comes with unique challenges that require proactive and strategic project management to ensure success. While there are a few great examples of this, one recent example of a successful arrangement of this nature was through our work with Lower Murray Water (LMW), a water corporation based in North-West Victoria.

The Lower Murray Water (LMW) Sunraysia Water Efficiency Project (SWEP) is a recent example of how early and continued engagement of expert project managers helped set a project up for success, supporting the delivery on time, on budget, and with maximum benefit to stakeholders.

SWEP wasn't just a \$37.9 million irrigation modernisation initiative, it transformed 27km of aging infrastructure, boosting efficiency and sustainability for Sunraysia's agricultural future. The project involved modernising channel infrastructure, removing hundreds of outdated Dethridge wheels, and installing new domestic and stock flowmeters. By implementing these upgrades, the project significantly improved irrigation efficiency, water delivery reliability, and supported long-term sustainability for the Sunraysia region's agricultural community.

SEQUANA'S ROLE: COMPREHENSIVE PROJECT MANAGEMENT ACROSS ALL PHASES

Across three years, Sequana worked closely with LMW to plan and deliver the Sunraysia Water Efficiency Project (SWEP).

The scale and complexity of the project was outside of 'business as usual' arrangements for LMW, which they recognised early, seeking external project delivery support.

Our team provided comprehensive end-to-end leadership and support across all project phases, demonstrating the value of full-lifecycle project management in de-risking complex and major projects.

Sequana's early involvement was instrumental in setting the project up for success, critically reviewing and updating the budget estimate, schedule and delivery approach for the project in support of the business case. We helped LMW in establishing the funding agreement milestones and payment regime, ensuring that the outcomes were challenging but deliverable, and would position LMW well to finance and deliver the project.

Once funding was secured, Sequana led the establishment of the project, setting up a dedicated project team, governance arrangement, and project management framework. A Project Control Group (PCG) was established as a sub-committee to the Board, led by an independent with experience on standalone, major capital work programs.

The Sequana team were embedded into the project team through delivery, including key roles such as the Project Director, Senior Project Manager, Communications Manager, Procurement Advisor and several Project Managers. We supported LMW with scoping, managing competitive tendering processes, and managing consultants and constructors as required to deliver the works.



What sets this project apart is the integration of project delivery specialists into the project from the very beginning with hands-on project management and construction expertise.

By involving a team which had practical experience across all project phases, LMW was able to ensure that governance, funding, and execution were all seamlessly integrated, resulting in the project being delivered on time and under budget.

The project is now referenced by the Commonwealth and Victorian Government departments as a model project for its successful governance and delivery arrangements.

The successful delivery of the SWEP is testament to the power of proactive project management, strategic governance, and hands-on execution expertise. By partnering with water corporations like LMW, Sequana ensures that critical infrastructure projects are not only funded and approved, but successfully delivered.

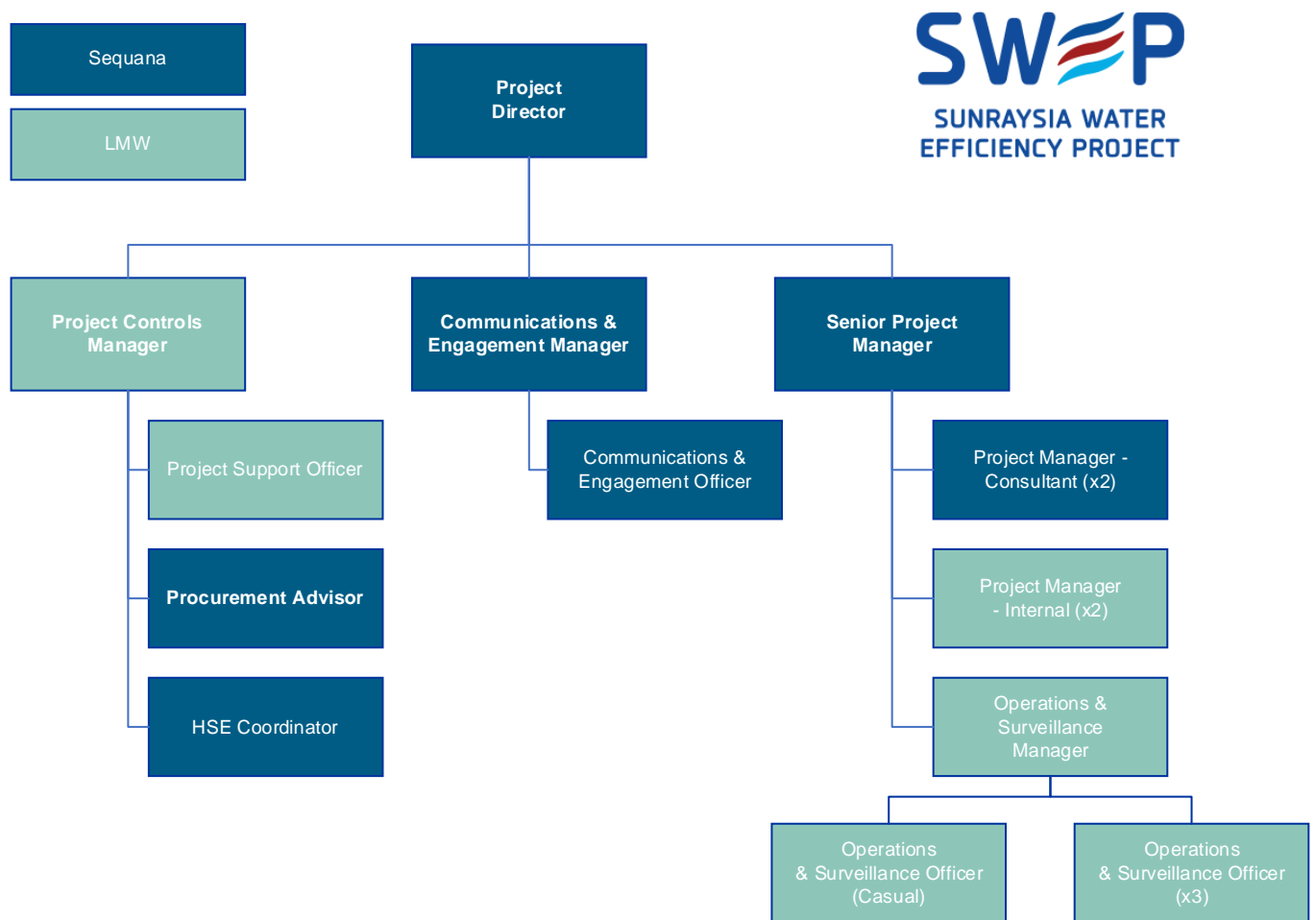


Figure 1 Organisational Structure for the LMW SWEP, showing Sequana and LMW project roles



REAL-WORLD LESSONS: CHALLENGES AND MITIGATIONS

Sequana’s experience with major water infrastructure projects offers invaluable lessons for managing distressed projects effectively. Below is a table that represents the high-level issues that can occur, with mitigations measures that should be considered.

Issue	Mitigation Measures
Ineffective governance	Establish a tailored PCG to streamline decision-making and provide expert guidance.
Inadequate leadership	Recruit experienced project personnel to instil a delivery-focused culture.
Conflicting project objectives	Develop and agree clear objectives and principles to align stakeholders and guide planning.
Delays in governance approvals	Introduce consistent metrics for board approvals to minimise rework.
Stakeholder engagement challenges	Form a dedicated stakeholder committee and develop revised engagement plans.
Lack of process ownership	Centralise planning functions with clear accountability and establish standardised workflows.
Procurement inefficiencies	Adopt a revised delivery model emphasising economies of scale and local expertise.
Contract management gaps	Appoint experienced contract managers and strengthen policies to improve cost control and risk management.

WHAT DELIVERY AGENCIES CAN DO TODAY

To avoid potential issues and ensure the successful delivery of both standard and complex projects, delivery agencies should adopt a proactive approach by implementing several key actions.

Engaging external experts for a project health check can provide an unbiased and comprehensive evaluation of the project’s current status, identifying hidden risks, assessing timelines, and uncovering any early warning signs that might hinder progress. This outside perspective offers valuable recommendations for adjustments that can save time, resources, and reputation in the long run.

In addition, reviewing current governance structures is crucial for ensuring they are equipped to manage complexity. Governance frameworks should be evaluated to determine if they support clear decision-making, accountability, and adaptability to evolving project demands. This may involve strengthening reporting mechanisms, streamlining approval processes, or ensuring roles and responsibilities are clearly defined.

Finally, conducting a stakeholder engagement audit can significantly enhance collaboration and alignment. This process helps identify communication gaps, misaligned priorities, or overlooked stakeholders who may influence the project’s success. Improving stakeholder engagement ensures that all parties remain informed, involved, and committed to shared objectives.

By prioritising these actions, delivery agencies can build resilience, reduce project risks, and set the foundation for success in any type of project environment.



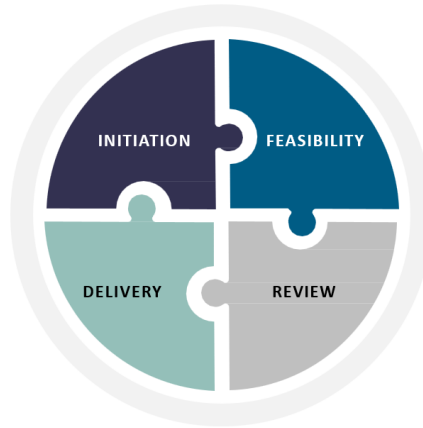
SERVICES ACROSS PROJECT LIFECYCLE

INITIATION CAPABILITIES

- Investment policy development
- Business case writing and management
- Business case technical and financial input
- Project feasibility and planning
- Procurement and delivery strategy
- Project related policy development and implementation
- Governance and Project delivery framework development
- Capital investment strategy.

DELIVERY CAPABILITIES

- Contract management and administration
- Development and implementation of risk mitigation strategies
- Analysis and negotiation of tenderer appointment, contract variations and amendments
- Project directorship and management
- Project governance design and analysis
- Time, budget, cost and financial control and reporting
- Risk management including qualitative and quantitative risk analysis
- Project pipeline and portfolio analysis
- Project budget and schedule development and assessment
- Asset management
- Operational readiness
- Gateway Reviews project health checks and independent peer reviews.



FEASIBILITY CAPABILITIES

- Transaction management
- Commercial framework and contract documentation development
- Risk profile development and analysis
- Financial and operational modelling
- Value for money, Public Sector Comparator analysis and economic appraisal
- Technical project due diligence
- Gateway Reviews project health checks and independent peer reviews.
- Stakeholder and Community engagement
- Funding Deed negotiation and preparation

REVIEW CAPABILITIES

- Project performance reviews
- Project reset and restructure planning
- Project delivery assurance
- Dispute avoidance and guidance on client and contractor obligations
- Analysis, negotiation and settlement of variations and claims
- Claims management, preparation and defence
- Independent Expert opinions
- Preparation of submissions for dispute resolution processes
- Alternative dispute resolution support including expert determination and mediation
- Arbitration and litigation support
- Distressed project reviews and restructures.

To ensure the delivery of complex projects, the need for a reliable, knowledgeable partner is paramount. Sequana is uniquely positioned to be that partner. With extensive expertise in project management and infrastructure delivery, as well as expertise in environmental planning, Sequana brings both the technical know-how and strategic vision required to overcome capability challenges.

Our approach emphasises collaboration, ensuring that we work closely with clients to build trust and achieve shared goals. Sequana's delivery framework is designed to tackle every stage of the project lifecycle.

Reach out to us to find out more about our project rehabilitation or confidentially discuss existing at-risk projects.