

A Summary of recent resources in

Risk Management for Infrastructure

1. Front-end Thinking:

Major projects, at the scale of Channel Tunnel, London Olympics 2012 and Crossrail, are risky, complex, costly and often irreversible. Such projects are affected by external context such as political, social and economic conditions, which are well beyond the control of the project sponsor. This leads to unexpected setbacks, as well as opportunities. In practice, many issues are often overlooked or inadequately addressed. For example:

- Projects are often set out without criteria for systematic evaluation of success, and judged by their short term success, rather than their long term value;
- The design of the construction is often disjointed with the operational phase;
- Very few projects do enough feasibility work to develop a robust understanding of what is needed;
- The outturn cost often escalates substantially beyond initial budget; and
- Risk analysis and mitigation often gets insufficient attention.

This calls for more effort in the front-end phase, to best avoid pre-mature commitment, especially to the wrong project or the wrong variation. The Front-End Thinking guidance is designed for all professionals playing an important role in major projects, to address these vital issues, particularly from the viewpoint of the project sponsor. From reading this, you will understand the need for dedicated and determined leadership, to create an inspiring vision of what the project will achieve and to carry its development through all the difficulties which may be encountered. You will also realise the importance of ensuring that the team of people involved in the development process includes a sufficiently wide range of skills, experience and imagination to be able to envisage all the future circumstances which may arise and how they can best be managed. Having sufficient resources of competent people to undertake the development process and explore all the issues thoroughly is critical for ultimate success.

Major Infrastructure Projects: Key Front-end Issues

2. Risk Analysis and Management of Projects: RAMP:

Risk lies at the heart of civil engineering. The consequence of failure of infrastructure during both construction and operation can be financially catastrophic and life-threatening. Many engineering principles are also based on the expectation and mitigation of risks. However, the awareness and analysis of risks in the civil engineering industry primarily evolves around health and safety risks and technical risks; the financial impact of such risks in the context of business or enterprise is often underappreciated. Yet the appreciation and management of the business implications of engineering risks plays an important part in improving the soundness of decision making and ultimately the degree of success of projects. In an increasingly complex and interconnected world, the effective management of projects and their related risks is of critical importance to businesses, governments and wider society.

The RAMP guidance is recognised and recommended by the UK government as a useful methodology for controlling project risk. It is jointly promoted by civil engineers and actuaries to raise awareness of the financial implication of risks, and to provide a framework for comprehensive risk analysis and mitigation for infrastructure projects. It provides a detailed and practical step-by-step guide of implementing its principles in the process of decision-making and risk management. Moreover, the RAMP guidance offers valuable flexibility to users, in that its methodology can be used in not only complicated and detailed processes, but also broad-brushed and speedy assessments.

[*Risk Analysis and Management for Projects: A strategic framework for managing project risk and its financial implications, Third edition*](#)

3. [STRATRisk](#):

Civil engineers construct assets that perform a pre-defined function for an organisation in the long term, which is why civil engineers consider risks throughout the project lifecycle. Traditional methods of risk management are based on identifying possible risk events, and then assessing their likelihood and potential impact, before deciding whether it would be worth taking mitigation action. However, a fundamental premise of this approach is the reoccurring and repetitive nature of the exact same risk. At the strategic level, an organisation is typically exposed to a wide range of uncertainties and unknowns that are well beyond its control, and are extremely difficult, if not impossible, to be adequately quantified. Such events can be financial crash, political turmoil, regulatory changes, environmental changes, rise/fall in market demand, etc.

The StratRisk guidance is designed for organisations to manage their strategic risks well, both threats and opportunities, in order to survive and prosper under all circumstances. It is of universal application and can be applied in any organisation or industry, in either the public or private sector. It recommends numerous approaches such as board involvement, culture, communications and organisational structure, to tackle the uncertainties, unforeseeable and unknowns. It also provides a checklist of typical strategic risks, as well as practical tools to conduct assessments.

[*Strategic Risk: A Guide for Directors*](#)

www.stratrisk.co.uk

Note: Both RAMP and STRATrisk were used by Crossrail in building London's new railway.