

Engineers and Government The Case for Improving Strategic Risk Management

Gordon Masterton,

Professor of Future Infrastructure, the University of Edinburgh; Formerly Vice-President
Jacobs Engineering, Past President IESIS

The shortage of in-house engineering expertise within government departments is sometimes cited as a justification for passing engineering and technology risk to the privatised sector. “Let risks be transferred where they are best able to be managed.”

But the flaw in this is that governments cannot exempt themselves from responsibility in the public’s eye simply by saying they have transferred the risks. When our life support systems break down, it will be of no value whatsoever for politicians to attempt to respond to the media, hungry for reasons and remedies, to say that “we have transferred responsibility for energy supply [or water supply, or flood management, or railway safety] to the private sector and it is their job to fix this.” There are certain responsibilities for the smooth running of our critical infrastructure that governments cannot abrogate. The media are ruthless at hunting out attempts to sidestep responsibility, and we should be grateful for that.

This does leave governments with a problem, however, because it is true that the days of large civil service engineering departments within the transport, energy, water, communications, environment and defence sectors are long past. Very few government departments, if any, have the critical mass of engineering intellect to be able to provide the ideal conditions for intellectual growth, knowledge development and strategic capability. That expertise has indeed evaporated as a result of austerity cuts, or migrated to privatised industries that run public sector services in packaged units. But these packaged units are split into regions, or other convenient financial bundles that shareholders see as having the right balance of risk and reward. They are no longer national assets, they are regionalised assets. But who now has the holistic national overview? Who is equipped to make evidence-based decisions and apply engineering methodology to assist politicians to make critical decisions on critical infrastructure? The public still expects governments to have that capability. But governments have largely lost the skills and resources to fulfil that expectation.



But there is a way forward that does not need to involve re-nationalising our infrastructure services. Governments can and should create the right platforms for expert engineers to provide knowledge of the research-base, the analytical interpretation of evidence, and the overview of strategic risks that should inform political decisions.

When the decision was made in 2007, through the passing of the Crossrail Act, to begin the largest construction project in Europe, the Department for Transport and Transport for London recognised that they needed help. Firstly, they recognised that a new delivery entity would be required, and created Crossrail Ltd (CRL) as a subsidiary of Transport for London. In turn, they recognised that growing this organically into an organisation capable of delivering the programme was not credible. Contracts were let for delivery partners and design consultancies, and later, construction and equipment contractors and their supply chains. They created the building blocks of a successful design, procurement, delivery and operational capability, within the tension created by the private sector tendering in competition.

But this model also, by necessity, breaks down work packages into manageable chunks. Who retains the holistic overview of the programme? Who holds the risk of strategic failure? Would it be acceptable for government to hide behind the devolved responsibilities to CRL in the event of huge cost or schedule overruns? Or the strategic failure through a local council issuing a stop work injunction as a result of a breakdown in stakeholder relations? The Department recognised that it still retained the lion's share of the ownership of strategic risks.

But how could the Department match the intellectual horsepower on risk management within the devolved organisational structure? Would it always be in the position of having to accept the views expressed but the delivery organisation because therein lies the expertise? Would reliance on that expertise entirely be a strategic risk in itself?

The Department of Transport decided that this would indeed be a risk too far, and commissioned long term expert support by appointing a Crossrail Project Representative (PRep). Jacobs was successful in competing for that, and since 2009, has performed that role - see Figure 1. The PRep team was selected for its experience and capability in managing major programmes, its proven track record in assessing and managing delivery and operational risks, and its integrity and seniority, sufficient to earn the respect of the delivery organisation, who would be subjected to its oversight and assurance role. The PRep team was co-located with CRL senior management and a continuing presence of core personnel (a small but highly experienced team) with full access to meetings, data, and reports. A regime of independent monthly reporting, shared with CRL, on how the strategic risks in the programme were being managed kept the client informed on progress, and was the vehicle for raising issues. By being out of the direct responsibility for directing and managing the programme, the PRep team could retain that independence of thought and had the thinking time so often not afforded to senior managers within the constant pressure of a high stakes delivery programme. One of the early PRep successes was insisting that the quality of monthly and semi-annual reporting by CRL should be improved, and external advisers were finally commissioned by CRL to do exactly that. The PRep role also had a dimension of client behaviour management – eg resisting inclinations of the client to instruct changes.

This model of independent peer review was commended by the National Audit Report of 2014. <https://www.nao.org.uk/wp-content/uploads/2014/01/Crossrail.pdf> which said:

“The Crossrail programme has adhered to the principle of holding projects to a very high level of scrutiny before proceeding by:

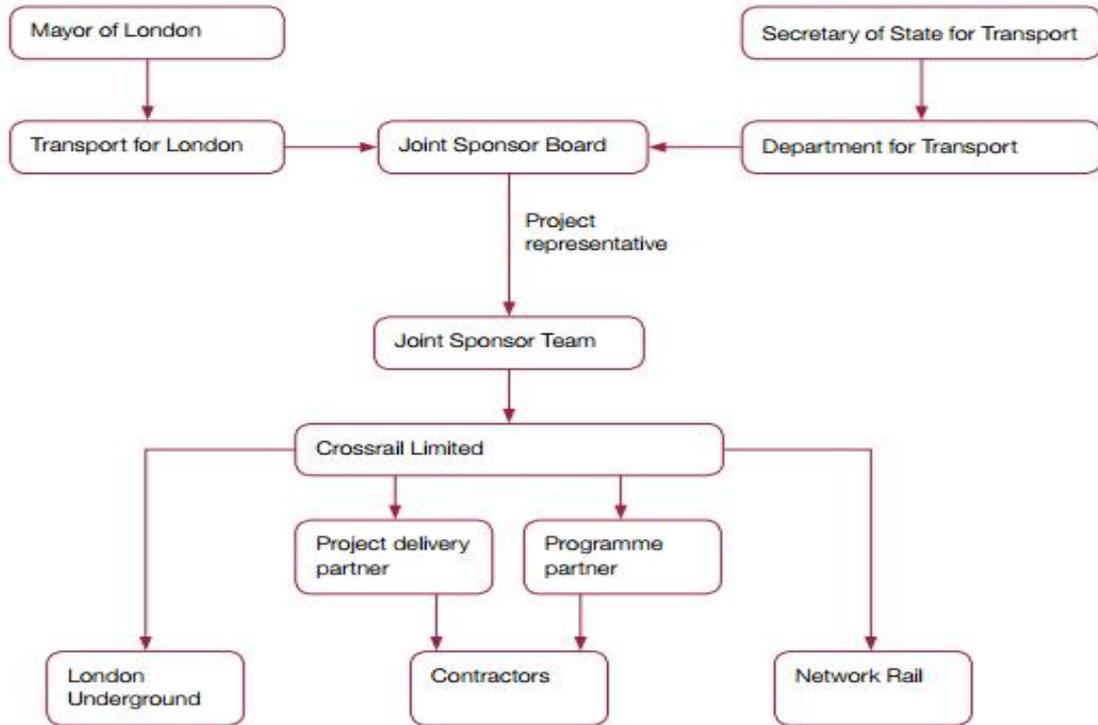
- *Clear formal agreements;*
- *Crossrail Limited earning its autonomy to deliver the programme by passing a series of challenging review points;*
- *Strong internal and external challenge to Crossrail Limited from the Project Representative, a team of senior engineers that reviews and challenges Crossrail Limited’s work on behalf of sponsors;*
- *Either sponsor could withdraw from the programme and the programme could be cancelled up until the final review point;*
- *The scope was clearly defined. To date, sponsors have proposed only ten changes to the programme.”*

And: *“The Department’s oversight benefits from:*

- *its role on the Joint Sponsor Board;*
- *the presence of a Department-nominated non-executive director on the board of Crossrail Limited;*
- *the Project Representative, who reviews and provides commentary on Crossrail Limited’s regular progress reports, as well as carrying out focused reviews of particular aspects of the programme. These reports help the Department and Transport for London to engage with and challenge Crossrail Limited effectively; and*
- *clear, high quality monthly and semi-annual reports on progress, which, on the whole, focus on the main issues of interest for sponsors.”*

And NAO concludes its report with. *“Overall, if progress to date can be maintained, and risks managed, Crossrail is on track to achieve value for money.”*

The model of expert, independent oversight and assurance is eminently transferrable to other programmes, and need not be restricted to the construction phase. Government needs expert engineering advice and guidance in all areas of infrastructure, even those that are apparently mature and dealing with incremental decision-making. An expert, independent body can take that overview of the national interest that is lacking in the current dis-jointed structures for critical infrastructure risk management.



Source: Department for Transport

Figure 1 Crossrail organisation structure