

Long-term resilience

Left unchecked, our local and national infrastructure will have a tendency to become more exposed as design lives are exceeded and our climate changes. In addition, as societies develop and become more affluent, the cost of infrastructure failure increases significantly. Hence, it is important to ensure that our infrastructure is fit for purpose and as future proof as possible. With this in mind, we continue to undertake challenging and creative research in the following areas:

- **[Sustainability & smart infrastructure \(/research/activity/civil-engineering/long-term/sustainability/index.aspx\)](/research/activity/civil-engineering/long-term/sustainability/index.aspx)**. The fabric of our urban areas is deteriorating and is coming under additional stresses brought about by more extreme weather events and 'heavier usage' as populations grow, while investment to increase capacity lags behind. This is a financial 'time bomb' for all western governments and societies, and an area in which very major investment (many billions) is going to be needed. Through large scale developments (e.g. the Birmingham Eastside project) we have explored the ways in which urban sustainability can be maximised and identified processes that hindered or prevent sustainable practices from being adopted.
- **[\(/research/activity/civil-engineering/long-term/smart-water.aspx\)](/research/activity/civil-engineering/long-term/smart-water.aspx) Smart water (</research/activity/civil-engineering/long-term/smart-water.aspx>)**. Cities of the future will experience difficulties in efficiently managing scarcer and less reliable water resources. Realising the shortcomings of conventional water systems there is a need for a change in the way we manage water. In response to this, we are developing 'smart' technologies for the design and control of urban water systems. These technologies will enable urban water systems to be designed, controlled and maintained in a way that allows optimisation of water quantity, water quality and the water energy footprint.

