

An Integrated Solution to Water Management Problems in London: Challenging the case for the Thames Tideway Tunnel

In the six years since the Thames Tideway Strategic Study Group recommended a single tunnel solution to the problem of sewage overflows in the Thames the world has moved on. The more enlightened cities of both Europe and the US are increasingly recognising the benefits of choosing green infrastructure solutions over grey to deliver more sustainable and integrated water management solutions to the challenges of urban living in the 21st century. It is time to revisit Thames Water's plans for the 'super sewer' in London in the light of the growing evidence that sustainable drainage solutions (SuDS) can deliver much wider benefits at less cost to the consumer.

The Evidence

Economic

- In the USA and now in the UK, new tools have been developed showing that the added economic value of using green approaches instead of new sewers can be prodigious – some \$3bn in Philadelphia for example. Such added value is highly significant in the current economic climate.
- Ofwat noted that likely costs for both Thames and Lee Tunnels taken together have doubled since 2006. The cost benefit analysis was marginal in 2006 so can only have got worse.
- The Tunnel is currently costed at £4.1bn but there is a general acceptance that this cost is likely to rise: the 50 km long Channel Tunnel, built from sites in the open countryside, overran budget by 80%. The 53 km Seikan tunnel in Japan, opened in 1988, was 12 times over budget.
- The U.S. Environmental Protection Agency summarised 17 case studies of developments applying green infrastructure techniques in December 2007, concluding that "in most cases, [green infrastructure] practices were shown to be both fiscally and environmentally beneficial" with total capital costs savings ranging from 15% to 80%.

Environmental

- Philadelphia's Water Commissioner noted that a green approach to storm water control brings with it significant and measureable improvements in the urban environment, including biodiversity, reductions in greenhouse gas emissions, reductions in electrical and fuel usage, improvements in aquatic and terrestrial ecosystems and associated water quality enhancements.
- Local management of rainwater reduces carbon and energy use associated with pumping and treatment of runoff.
- Harvested rainwater can be used for many purposes in periods of drought and low rainfall.

Social

- Greening of the public realm provides a much more pleasant inner urban environment and provides more places for community recreation and educational purposes.
- Communities, especially local schools, can be brought together through activities aimed at the greening of their local environment.

The Defra Cost Benefit Analysis

- Defra's revised CBA document is inadequate both as a form of due diligence or to enable due diligence to be undertaken. Two of the factors which have changed since the original CBA was undertaken are the Floods and Water Management Act 2010 and the Code for Sustainable Homes. Both will have the effect of reducing, over time, the amount of surface water discharged to sewers. There is consequently a risk that the Thames Tunnel will be left as a 'stranded asset' in 30 years time, one that no longer serves any useful purpose but which is still incurring substantial costs. Instead, the only possible changes that have been included in the revised CBA are those that inflate the benefits.

A combined grey and green solution for London?

- Environment Agency monitoring suggests that 98.7% of discharges come from 18 overflows of the 34 to be covered by the Thames Tunnel, 80% of discharges come from 10 overflows and that five overflows contribute some 70% of the total.
- A much smaller tunnel, combined with SuDS, could deliver the same benefits as the single tunnel proposal at much less cost and with wider benefits for water management more generally.
- There are many methods of filtration and water treatments (vortices, dock water treatment, bubblers, booms and skimmers) that can be employed quickly as temporary measures, or longer term, as SuDS are developed.