

National Infrastructure Commission

Congestion, capacity and carbon: Priorities for National Infrastructure

Background to CIWEM

CIWEM is the leading independent Chartered professional body for water and environmental professionals, promoting excellence within the sector. The Institution provides independent comment on a wide range of issues related to water and environmental management, environmental resilience and sustainable development.

CIWEM welcomes the opportunity to respond to the National Infrastructure Commission on its call for evidence. This response has been formulated with the assistance of our Technical Panels who have a wealth of experience in the water and environment sector. We have tackled the questions that are in the areas most relevant to the Institution and its members.

Response to consultation questions

23) What should be done to reduce the demand for water and how quickly can this have effect?

Supplying water to homes now accounts for over fifty percent of the total water abstracted from the environment¹. Water efficiency and demand management offers an area where incremental changes can be made towards more resilient systems (e.g. increased metering alongside tariff responses to water availability and use, reducing demand through improved customer behaviour). A big challenge in this area is communicating the risks around water scarcity when it is not seen more widely as a big societal risk. Raising customer awareness of the water they use can only help serve this and will improve the willingness to pay for improved resilience. There is a need to understand the value of water in different contexts and locations as currently water is undervalued.

Getting full metering (or as close as technically practical) is critical. Households that are metered use about 10% less water than unmetered households. Southern Water found metering reduced consumption by 16%. Current meter penetration is about 55%, with Southern at around 85%. Water companies should be encouraged to substantially increase metering penetration.

CIWEM considers that where possible, product-level standards for water using devices should be encouraged in preference to whole-building standards. This is because property level standards as enshrined in the current water use calculator include assumptions of appliance use rates and allow those using them to 'trade-off' between appliances and thus reduce the overall effectiveness of the property-level standard. Product-level standards could be

1 Defra. 2017. Water Abstraction statistics, England 2000 to 2015

explicitly linked to the new water efficiency label performance ratings, which would ensure a consistent approach to water efficient products in new homes and in the refurbishment of existing homes. Product-level standards have been adopted in Scotland for toilets and taps².

As technology and understanding improve, standards should be continually reviewed. Research has shown that both current whole building standards of 125 lpd and 110 lpd can be achieved at no additional cost, compared to a 'do nothing' scenario³. Therefore it should be expected that 110 lpd should be the minimum standard in the next five years. Around 80 local authorities are using the 110 lpd standard in their planning guidance.

In most homes more than half the water used in the home is hot water. The government should put more emphasis on the role that hot water efficiency can play in reducing customer bills. Water efficiency measures that reduce hot water use should be included in a government energy efficiency incentive scheme to replace the Green Deal and to also help achieve statutory carbon reduction targets.

Leakage reduction is a fundamental part of demand management and depends critically on water companies 'doing their bit' (and being able to demonstrate that they are doing so against easily understood targets). Good data are essential to understand current rates of consumption, to forecast consumption and to evaluate the cost-effectiveness of water efficiency, water balance, consumption, leakage and conservation interventions. We recommend greater consistency in measuring and estimating consumption and leakage and greater sharing of data, particularly between water companies, where there are clear financial and statistical benefits from working at scale.

The industry average leakage level is about 20% of the amount put into supply. Several overseas suppliers have a much lower level. CIWEM welcomes the aim for 15 percent leakage reduction at PR19 but considers this provides less of a challenge to companies with high rates of leakage (some are over 25%). Those that are poorly performing on leakage reduction should be expected to deliver a greater improvement. Company ownership of supply pipes will also help identify leaks. Water UK state that around 30% of leakage is estimated to arise from customer-owned water supply pipes⁴.

24) What are the key factors that should be considered in taking decisions on new water supply infrastructure?

The significant and growing risks from severe drought, climate change, population growth and environmental drivers looking out to 2065 were explored in the Water UK Water Resources Long Term Planning Framework. The report showed that demand management alone would not be sufficient and that a range of new strategic water resources schemes would be required. Many of these are already being explored through the Water Resources Management Plan (WRMP) framework. It illustrates the benefits of more integration of water resources and the transfer of water between regions, where that is sustainable to do so,

2 [Scottish Building Standards 2013](#).

3 Environment Agency: Assessing The Cost Of Compliance With The Code For Sustainable Homes WRc Ref: UC7231

4 For more information please see CIWEM's policy statement: <http://www.ciwem.org/wp-content/uploads/2016/04/Water-supply-pipes.pdf>

alongside development of new storage and more innovative supply schemes. However, delivering large inter-regional transfers and new storage capacity are complex projects and require lengthy analysis and agreement before beginning work on associated infrastructure, which takes time.

The new National Policy Statement⁵ which Defra is currently consulting on will reduce the thresholds of national significant infrastructure for water resources making it easier for them to pass through the planning system (they will be decided by the Secretary of State rather than by local authorities).

CIWEM considers there needs to be a stronger steer to EA and Ofwat (and the water companies) in support of regional, multisector water resources planning together with greater national tier co-ordination to help ensure that nationally significant solutions progressed are the right ones and that they deliver multiple benefits. For example, with transfers, a single short link can make a world of difference on a bigger scale so systems of short links should be seen as an entity.

There is a case for a national level 'adaptive plan' that supports ongoing WRMPs and balances risks against opportunities to defer costs. Such a plan would identify the key 'trigger points' that will determine which set of investments and policy interventions would be needed for the 2040 and 2065 horizons, depending on how risks materialise in the future. Some risks are immediate and need a prompt response: the risk of drought is present now and the government needs to achieve sustainable levels of abstraction by the 2020s.

25) How can long-term plans for drainage and sewerage be put in place and what other priorities should be considered?

The most effective interventions to ensure that drainage and sewerage capacity is sufficient to meet future demand are to:

1. Keep surface water from new developments out of combined systems and separating surface water out wherever opportunities arise.
2. To create overland flood exceedance routes in to minimise damage where systems capacity is exceeded.

Progressive surface water separation has been used extensively in Switzerland to manage capacity. Removal of a relatively small proportion of surface water from a combined system can give capacity to admit a significant increase in foul flows from new developments.

Increasing green space in urban areas can increase natural infiltration and reduce run-off helping to reduce flood risk and the transportation of pollutants. Urban layout and landscape should be carefully designed to allow the space for flood water to pass freely along pathways. Roads and streets constitute up to 70% of impervious areas in urban areas and as

5. National Policy Statement for Water Resources. [Consultation on developing a National Policy Statement for Water Resources \(NPS\)](#) and proposals to amend the definition of nationally significant water resources infrastructure in the Planning Act 2008.

such they act as major conveyors of storm water and an important flow path when the drains beneath them are full to capacity.

CIWEM has published research alongside WWT and supported by 15 other organisations into the quality of sustainable drainage systems in England under the alternative planning led approach. CIWEM considers intervention at the national scale is needed to increase the uptake of SuDS and resolve issues around their management. These interventions are detailed within our evidence, the full report on our research and findings can be found at www.ciwem.org/suds.

Ofwat should be doing more to ensure that a waste water management plan (WWMP) process is established as a matter of importance and urgency. Ofwat should urge water companies to produce WWMPs on a voluntary basis (as was the case for Water Resource Management Plans (WRMPs), before they became statutory obligations upon water companies).

26) What investment is needed to manage flood risk effectively over the next 10 to 30 years?

The Environment Agency's Long Term Investment Scenarios (LTIS) 2014, quantify the level of investment needed in flood risk management that is economically optimal on a benefit cost basis even if investment levels rise in line with the long-term need. It projects that even if investment levels increase over time in line with the best case scenario there will still be an increase in the number of homes at a high risk of flooding, from 150,000 homes today to 180,000 in the 2060s. This is 250,000 residential and non-residential properties combined. This is an unacceptable situation which requires attention to rectify.

The LTIS assumes that external partnership funding will be found for nearly all capital flood defence schemes, that existing defences will be maintained to the standard of protection for which they were designed, that flood risk management structures and non-direct infrastructure services (such as highway drainage) will be maintained effectively and that there will be a zero tolerance to inappropriate development in areas at flood risk. Although based on current practice these are bold assumptions. It also largely ignores groundwater and surface water flood risk and the consequences of flooding on land and property inundated by salt water together with the erosion which will inevitably occur.

An estimated 1,500 new homes are also being built in the highest risk parts of the floodplain every year and anecdotal evidence is that it is likely that many more are being built in other high risk areas. As yet unquantified numbers of properties are being built in high risk areas and funding new defences to protect them. No mechanisms appear to be in place to ensure that these new defences do not become a burden on the public purse. This will add to the long-term costs and risks of flooding.

The government needs to consider how coordinated action could improve the resilience of the 250,000 properties that will remain at high risk in the 2060s. This needs to be considered urgently so that Flood Re can deliver on its aims and ensure that there is access to flood insurance once the scheme ends.