

ICE State of the Nation Infrastructure

Call for Evidence

The [Institution of Civil Engineers](#)(ICE) invites you to provide evidence to the next of our [State of the Nation](#)(SoN) reports – an assessment of the UK's economic infrastructure, to be published in the summer of 2014.

SoN Infrastructure, to be produced under the leadership of Keith Clarke CBE, will provide a grading for each area of economic infrastructure – energy, transport, flooding, water and waste. The project analyses the capacity, condition and performance of the UK's economic infrastructure networks, enabling ICE to produce a high level policy report aimed at government, Whitehall, political parties, industry and a range of other stakeholders. Through *SoN Infrastructure*, ICE will make recommendations for improving infrastructure network performance and removing barriers to delivery, such as financing, planning and procurement, and insight into improved asset management.

SoN Infrastructure will make assessments across six separate sector related chapters:

- Energy
- Strategic Transport Networks
- Local Transport
- Water and Wastewater
- Flood Risk Management
- Waste and Resource Management

Your input is needed to help develop the assessment and inform ICE's position. A list of questions is given below as a framework to build your response. **Please be sure to answer the questions with specific focus on your area of sectoral expertise.** If, for example, you are a transport expert, please make it clear whether your comments relate to Strategic Transport or Local Transport. Please provide clear evidence to support comments and reference any data used.

We request that respondents limit their overall submission to **3,000 words**. If you consider that the questions below do not adequately cover issues that you would like to raise then please provide additional comments.

The submission deadline is **Wednesday 4th December 2013**.

Responses can be made using the online form or via email submission to SoN2014@ice.org.uk. If you have any further questions then please do not hesitate to contact Andrew Wescott, ICE Policy Manager, at this email address.

Your evidence will be used alongside desk research and oral evidence hearings to inform the content of the report and develop recommendations that will be put to governments and decision makers throughout the UK. All input will be acknowledged in the final report. ICE would like to thank you in advance for your time and assistance.

The Institution of Civil Engineers is a UK-based international organisation with over 75,000 members ranging from professional civil engineers to students. It is an educational and qualifying body and has charitable status under UK law. Founded in 1818, the ICE has become recognised worldwide for its excellence as a centre of learning, as a qualifying body and as a public voice for the profession.

State of the Nation Infrastructure

Call for Evidence – Questions

Please answer the questions with specific focus on your area of sectoral expertise, and provide clear evidence to support comments and reference any data used.

Response from the British Hydrological Society (BHS), incorporating details from the Scottish Hydrological Group (SHG)

Sector covered: Hydrology/Flood Risk Management/Water Resource Management.

1. To what extent is there a clear strategic lead for this sector?

The strategic direction for flood risk management is provided by European Directive 2007/60/EC on the assessment and management of flood risks, the *Floods Directive* (FD) which entered into force on 26 November 2007. For England and Wales, the Flood Risk Regulations 2009 require Lead Local Flood Authorities (LLFAs), the Environment Agency (EA) and Natural Resources Wales (NRW) to prepare and publish Flood Risk Management Plans (FRMPs) by December 2015. The Regulations set up a six year cycle of assessing, mapping and developing plans to manage flood risk. In the first cycle of implementation LLFAs are only required to prepare FRMPs in Flood Risk Areas where the risk of flooding from local flood risks is significant (as described in Government guidance). The Environment Agency and Natural Resources Wales are required to prepare FRMPs for all of England and Wales covering flooding from main rivers, the sea and reservoirs. The Environment Agency and Natural Resources Wales are also required to co-ordinate the publishing of FRMPs for each river basin district (the areas of England and Wales used for reporting to the European Commission). In Scotland, the Directive was transposed to Scots Law - by the Flood Risk Management (Scotland) Act (FRMSA) 2009: again, this provides the framework and direction that establishes the strategic lead for flood risk management. The legislation sets out a framework to support a collaborative approach to flood risk management. Responsible Authorities are clearly established: the Scottish Environment Protection Agency (SEPA), Scottish Water, Local Authorities, Scottish Ministers (plus national park authorities and **forestry commission** from December 2013. SEPA is one of the main Responsible Authorities; it performs a strategic role facilitating the development of key assessments, maps and plans to sustainably manage flood risk. It therefore provides a central role in directing the delivery of key duties. Flood Risk Management Planning is currently in the first cycle.

Water Resources Management is similarly provided strategic direction by an EU Directive that delivered a Community framework for water protection and management: Directive 2000/60/EC, the *Water Framework Directive* (WFD). The same agencies (EA for England, NRW for Wales, and SEPA for Scotland) are the lead authorities responsible for publication of River Basin Management Plans. The first of these were published in 2009: we are currently in the second cycle of RBMPs with the next series of reports due in 2015. The WFD requires comprehensive regulation of human impacts, whether from abstraction, impoundment, or discharge, to protect both the quantity and quality of the water environment. As part of this comprehensive management of abstraction, the public water supply authorities in England and Wales are required by EA and NRW,

together with the economic regulator for the industry (Ofwat), with developing Water Resources Management Plans, setting out their current and proposed means of delivery of supply to meet changing demand. The WRMPs are published on a 5-yearly cycle and project demand, together with a proposed strategy to meet that, for the next 25 years. This is, therefore, asynchronous with the RBMP and FRMP cycles which are 6-yearly. Water supply in Scotland is provided by a single authority but there is no requirement here for a national strategic plan: supply-demand strategic assessments are made on a supply zone basis as part of the Quality & Standards (Q&S) process which, again, is conducted jointly with both the environmental and economic regulators (SEPA and Water Industry Commissioner (Scotland) (WICS)).

2. How effectively are those responsible for delivery of infrastructure projects in the sector fulfilling their responsibilities?

In England and Wales, flood defence infrastructure is provided by EA and NRW. BHS is not able to comment on the effectiveness of this arrangement, or the infrastructure provided, other than to note that significant flooding of properties in recent years, widely reported in the press, has generally resulted from flood events that have exceeded the design capacity of defences provided.

In Scotland, flood defence is the responsibility of Local Authorities, in most cases through schemes funded by Scottish Government. It is difficult for SHG to comment on the performance of individual Authorities. Under the FRMSA 2009 there are changes to process for funding and delivery of Flood Defence Schemes that should streamline current procedures. Under the Act there should also be opportunities in future to establish more effective projects that consider whole catchments and incorporate the most sustainable measures to manage flood risk.

However, it is noted that there is a disconnect between return periods required for development planning purposes (1 in 200 year) and those required by Scottish Water for drainage systems design (1 in 30 year).

BHS is not able to comment on the delivery of infrastructure for public water supply, or waste water treatment.

3. To what extent are capital investment and a secure revenue stream in place to meet infrastructure requirements for this sector over the next 5 years?

BHS has no information regarding the capital funding of flood defence infrastructure. However, it is noted that recent announcements of cuts in revenue funding for EA have indicated that the funding of flood defence revenue is 'ring-fenced': this, however, is having a knock-on impact on staffing in other areas of the business. In Scotland, several discrete funding streams for flood risk management are in place, linked to specific sectors (e.g. flood defence, sewerage infrastructure, etc). The challenge currently is to align these streams to provide a coherent system to support the collaborative management of flood risk. However, it is noted that at the local authority level discretionary spending on drainage and flooding is not 'ring fenced' and there are concerns that with pressures on overall local authority budgets that spending ear-marked for drainage and flooding could be used for other purposes.

BHS is unable to comment on the funding of infrastructure requirements for water supply, wastewater treatment, or resources management, other than to note that these are generally the responsibility of the licensed provider, in conjunction with the relevant economic regulator, and will be subject to the fiscal constraints common to the whole of UK at present.

Underpinning the design of all infrastructure projects for flood and water resources management are the data provided by the relevant hydrometric authorities (EA, NRW, and SEPA) on rainfall and river flows that help determine the scale of the relevant development needs. Funding for capital development and revenue maintenance of the infrastructure requirements of hydrometry is currently under severe stress throughout the UK and the situation is unlikely to improve in the next 5 years.

4. To what extent does infrastructure in this sector contribute to the economic and social benefits of the community in your area?

It is clear that there are significant social and economic benefits to flood management infrastructure development. BHS would like to see wider benefits of flood management infrastructure (e.g. social, environmental) given more weight in cost/benefit appraisals for such infrastructure.

Water supply and wastewater infrastructure is generally an essential prerequisite to economic development and social wellbeing whether provided on a national, regional, or local scale. Modern policies on *social justice* dictate that these benefits should be equitably applied but regional and local differences still occur.

Hydrometric infrastructure contributes to economic and social benefits of communities by providing the data to inform sustainable flood risk assessment, water resources protection and development, drought management, and warning of impending flood events to enable action to be taken to mitigate potential impacts.

5. What is the condition of the infrastructure assets in this sector?

Flood defence infrastructure assets are primarily managed by EA, NRW, and (in Scotland) Local Authorities. Flood risk legislation requires of management authorities the development of asset registers and schedules of maintenance. This recognises the need to understand current conditions and put in place appropriate measures to maintain assets at least to their design standard. At this stage there is no clear national picture of the current condition of flooding and land drainage infrastructure.

Water supply and sewerage assets are maintained by the relevant licensed authorities. Again, there is no clear national picture of the current condition of these assets.

Hydrometric network infrastructure nationally is an ageing and deteriorating asset. Some new developments have occurred, generally to inform flood warning activities, but current revenue funding to maintain the network as a whole is insufficient.

6. What is the level and consistency of the service provided by the infrastructure? (Have there been any breaks in service?)

As flooding and drainage infrastructure is typically local in scale it is difficult to comment on the overall national picture. However, it is clear that many existing formal flood defence schemes which are not designed to be adaptable (e.g. to climate change) are likely to have a reducing standard of protection over time. This is primarily a result of changing hydrological conditions and catchment changes, informed by data from the hydrometric networks. With climate change there will be a need for more flooding and drainage infrastructure as well as funding to maintain and improve existing infrastructure, including that which monitors those changes.

Recent flood risk and reservoirs legislation seeks to establish a concerted strategy to recognise and manage important assets.

7. What is the relationship between the natural and built environments in this sector?

Understanding the relationship of the natural and built environment is fundamental to flood risk and water resources management.: To sustainably manage either, it must be clear how both environments can operate

in combination. This considers strategic, non-structural measures such as land using planning policy, the relevant roles of natural flood management techniques and structural measures (including surface water management planning), and ecosystem services. Establishing a balanced, holistic management strategy is central to the long-term delivery of sustainable flood risk and water resource management.

Such strategies must begin to consider how projects are viewed. The current direction is likely to be one where such projects must balance finance, social impact, effectiveness and climate adaptability to determine the most sustainable schemes. Thus the relationship between environments is likely to become more fundamental as whole-catchment approaches to sustainable flood risk and water resource management are employed.

8. What is the standard of resilience in this sector? (Have they defended against likely threats and made contingency plans for low risk, high impact events? Have they recognised and addressed interdependencies with other sectors?)

Resilience and adaptability are recognised by this sector. The mains threats are extreme floods (including those arising from structural sources) and droughts; both may be impacted by the changing climate. The legislation and supporting policies already cited above support resilience planning, including adaptation for climate change.

Emergency plans are established in readiness of extreme events across this sector. The challenge for the 21st century is to better balance the human demands of this sector with the water needs of the environment.