

National Infrastructure Commission

Discussion paper on the impact of the environment and climate change on future infrastructure supply and demand

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.

Summary

CIWEM welcomes the opportunity to comment on the National Infrastructure Commission's (NIC) paper on the impact of the environment and climate change on future infrastructure supply and demand. In general we have very few comments as the paper is well researched and referenced and clearly identifies the impacts that will need to be taken into account in its National Infrastructure Assessment. In particular we welcome the inclusion of green infrastructure and sustainable drainage systems in its scope.

Specific comments

5. Interactions between infrastructure and the environment

Table 3 implies there is no link between water scarcity and digital communications. However, new developments in smart metering, permanently installed sensors and other techniques will reduce water demand and therefore mitigate against the impact of climate change. Therefore, there should be at least one asterisk in the appropriate box.

5.2 Flood risk management

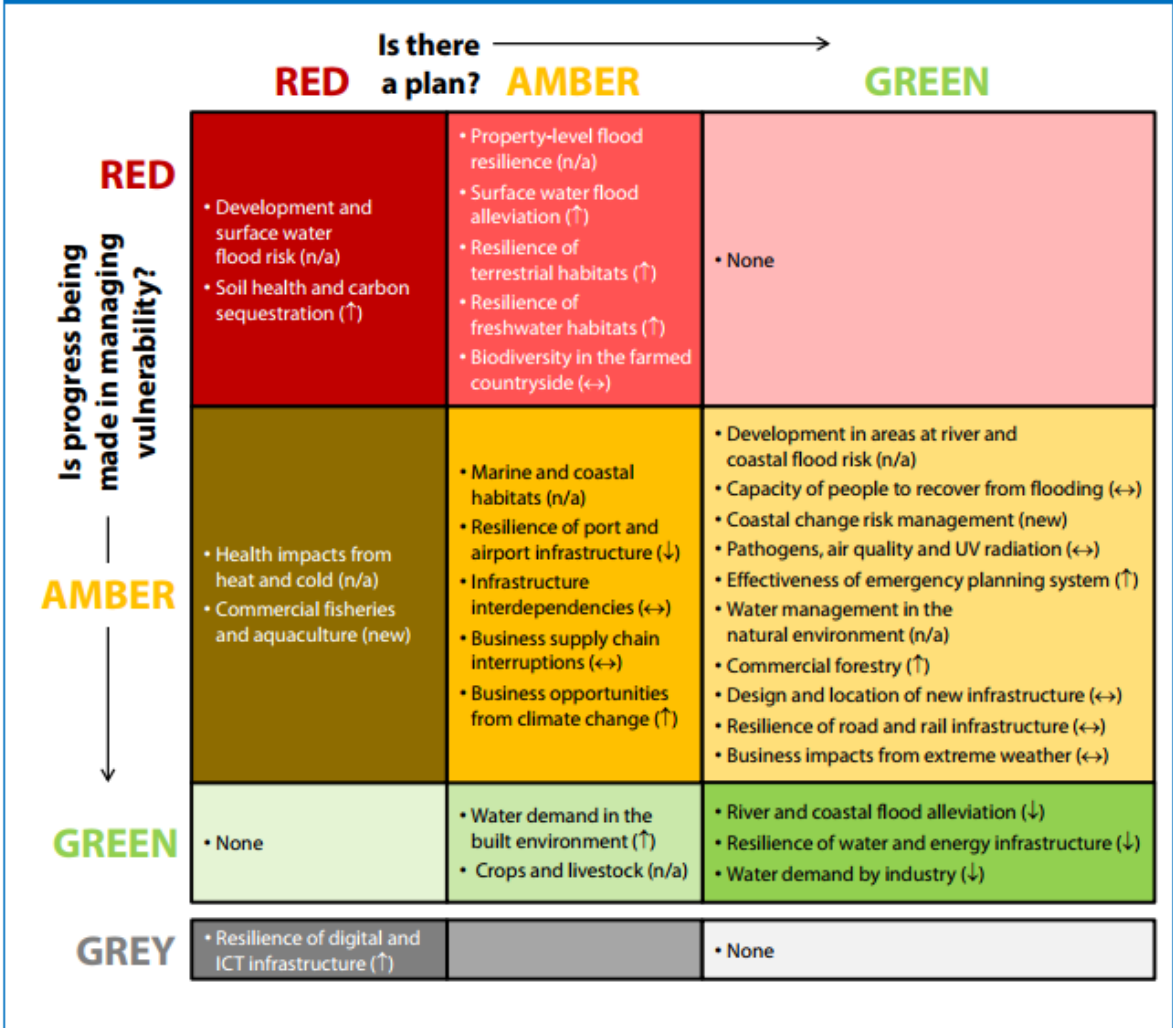
As the NIC paper was released prior to the publication of the latest progress report from the Committee on Climate Change Adaptation Sub-Committee (ASC)¹, it will be worth reviewing it for some of the updates detailed here and where actions are assigned to the NIC.

The ASC now identifies development and surface water flood risk as the top adaptation priority as indicators of vulnerability are increasing (see figure 1). Progress is also not being made on surface water flood alleviation (to existing developments). Three million properties at risk of surface water flooding and around 35,000 properties were affected by surface water

¹ Committee on Climate Change Adaptation Sub Committee. 2017. Progress in preparing for climate change 2017 Report to Parliament

during the major floods of 2007. These floods, whilst not solely due to surface water caused £660 million in damage to infrastructure and services including water supplies, treatment plants, roads and electricity supplies.

Figure 1. Adaptation priorities: are plans in place, and is progress being made?



Source: ASC assessment of policies and plans, and progress, for each adaptation priority.

Notes: Adaptation priorities have been categorised as follows:

- **Red:** plans and policies do not account for climate change risks, indicators of vulnerability are increasing.
- **Amber:** plans and policies partially address climate change risks, indicators of vulnerability show mixed progress.
- **Green:** plans and policies are in place, indicators of vulnerability are generally falling.
- **Grey:** insufficient evidence to form a judgement.

Key to changes since 2015: ↑ increased concern, ↓ decreased concern, ↔ no change since 2015, new: not part of 2015 assessment, n/a: scope of assessment changed so comparison with 2015 not possible.

The ASC finds: “Evidence suggests a significant and increasingly severe lack of capacity in the sewer network to cope with heavy rainfall events. The scale of the investment to tackle this issue has yet to be assessed and the ownership of the problem is fragmented between national and local government and the water industry.” New development is highly likely to add pressure to existing drainage networks and this is why CIWEM has championed the use of sustainable drainage systems (SuDS).

The National Flood Resilience Review is referenced in the discussion paper but it is worth acknowledging that the review did not assess groundwater and surface water flood risk so there is limited knowledge of infrastructure resilience to these.

Using an incomplete picture of climate resilience means spending may not be optimised to deliver value for money across a full range of climate risks (drought, surface water flooding, groundwater flooding and coastal change). This can potentially drive imbalanced priorities, for example, some water companies plan for a 1 in 500 year drought but only a 1 in 30 year sewer flood. CIWEM considers that a further review should address whether or not we are consistently using up-to-date standards and risk based approaches before committing to investment decisions.

We consider that the discussion paper should better address the different sources of flooding and resilience to them, as they have different impacts, require different responses and are managed by different agencies. Combinations of floods can also have an impact, for example the addition of groundwater flooding is likely to increase a flood's duration.

The ASC also notes that "there is no apparent plan by industry or Government to address the critical telecommunications and data infrastructure vulnerabilities identified by the National Flood Resilience Review".

5.3 Water resources

Section 5.3 There should be some mention of the need for a better understanding of the balance between leakage and consumption and the need to develop new infrastructure systems to manage both in order to reduce abstraction of water from the environment.

5.4 Impacts of water quality

Section 5.4.1 Climate change may lead to more algal blooms, more storm surges leading to higher sediments entering rivers, and more low flow events which will have water treatment requirements for water companies.

6. Green infrastructure

We are pleased to see the inclusion of green infrastructure within the scope of the NIC. In particular the recognition of the multiple benefits of sustainable drainage systems (SuDS). Further to our report *A Place for SuDS*² we are now able to provide a peer-review paper of our evidence: the *State of SuDS delivery in the UK*³. It finds that SuDS are beginning to become the norm, although "harder" solutions tend to prevail. Additionally, design and construction remain weakly regulated, and there is a lack of clear legal framework on SuDS ownership and maintenance.

² Laura Grant, Alastair Chisholm and Richard Benwell. 2017. A Place for SuDS. *CIWEM*

³ Peter Melville-Shreeve, Ana Arahuetes, Sarah Cotterill, Raziye Farmani, Virginia Stovin, Laura Grant and David Butler (in press) State of SuDS Delivery in the UK. *Water and Environment Journal*.