

I have the following comments on *PR24 and beyond: Long-term delivery strategies and common reference scenarios*, which I will refer to as ‘the consultation document’:

- a) I am encouraged that the consultation document encourages the water sector in England and Wales to plan, with foresight, beyond 2050 through developing strategies that take account of plausible (longer-term) changes in the key factors that drive the demand and affect the supply of water services and the implications of associated uncertainties. I note, from the introduction in the document, that *“these strategies would outline the long-term outcomes the company aims to deliver, and the key investments and activities that form the best pathways to achieving them, given future uncertainties”*, and that the long-term strategies *“should not only anticipate change, but adapt to it”*.
- b) The document focusses on key strategic responses, including the need to determine what level of investment is required to ensure sufficient resilience in water systems (to deal with extreme events) as well as an appropriate level of adaptive capacity within water systems to provide flexibility in the face of future change and uncertainty. With these objectives in mind, I endorse the use of an adaptive planning process and the application of adaptation pathways in helping develop strategic responses and investments to help deal with the implications of long-term change and uncertainty.
- c) As noted in the Introduction of the recently published British Standard, BS 8631(2021), on *Adaptation to climate change – Using adaptation pathways for decision making – Guide*, and illustrated in Figure 1 in BS 8631:2021, *adaptation (or adaptive) planning* involves an iterative learning process which forms the framework and helps establish the context within which *adaptation pathways* are developed and applied. Although the focus of BS 8631:2021 is on dealing with climate change, and the consultation document considers other forms of change (e.g., demographic, economic, technological, and environmental), significant elements of the guidance given in the British Standard are generic. Including a reference to BS 8631:2021 in Section 2.2 of the consultation document may therefore provide useful additional guidance to help water companies in developing and applying the relatively novel concept of adaptation pathways to long-term strategic planning.
- d) In my professional experience, scenario analysis is a useful technique for exploring the implications of different forms of change and levels of uncertainty on the performance of systems. Each scenario represents a sample from a plausible range of future conditions that are created by the dynamic interactions between climate, demographic, economic, technological, and environmental change. As implied by the setting out of common reference scenarios in Chapter 3 of the consultation document, scenario analysis is most effectively implemented within a well-structured framework.
- e) An effective framework for scenario analysis needs to consider the implications of combinations of scenarios as well as interactions between scenarios. Such interactions are recognised in the consultation document, an example of which is given in Section 3.1 (i.e., *“temperature rises caused by climate change may be associated with higher demand for water”*). These interactions may be highly dynamic and complex (such as, for example, the potential interactions between changing climate and environmental conditions) and may require systems mapping to help analyse their significance. The consultation document would benefit from greater clarity on applying combinations of reference scenarios, as well the potential need for applying systems mapping to help identify and understand the potential implications of interactions between factors (within individual reference scenarios) across combinations of scenarios.

Although I am convenor of the British Standards Institution Adaptation to Climate Change group, and a member of the team that drafted BS 8631:2021, the above comments are submitted in a personal capacity and do not reflect the views of either the BSI or Jacobs.