Editorial

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Although plenty of attention has always been given to asset management, the economic constraints in recent years, coupled with a recognition that climate change will test the resilience of our assets even further, brings new focus. There is greater-than-ever demand to extend the lives of many ageing assets, and to think about how newly constructed assets are going to be affected by changing demands in the future. In short, effective asset management is crucial and knowledge to support that is essential.

Although considerable information exists on how various materials respond to external factors, knowledge on some deterioration processes, and in particular rates or time-dependency, is actually quite limited. There is also a lack of knowledge at this time on how climate change could affect this deterioration.

Appreciation of deterioration rates is necessary for estimating and planning programmes of maintenance that contribute to an asset's whole-life costs, and for the day-to-day maintenance and renewal intervention activities. The degree to which either these activities will have to increase or assets will have to be future-proofed against increased deterioration due to climate change is also going to be important to understand so that investment demands can be considered and choices made accordingly.

Different assets have specialised needs, and the engineers maintaining and renovating them need specialist knowledge and skills. Sharing lessons learned is therefore vital. There is also considerable scope for further research into asset deterioration, and in particular perhaps to ensure that we are already monitoring the rates of deterioration of structures that are no longer being maintained, to build up our knowledge base.

This issue of *Maritime Engineering* features some aspects of asset management for different maritime asset types. In their briefing, Cunningham *et al.* (2015) look at abrasion of concrete in coastal structures. Although chemical degradation will be a key factor for many concrete structures, where these are located behind gravel beaches in aggressive environments abrasion can be highly significant. The authors present methods for optimising concrete mixes to help address this problem at the construction stage. This is also an area which may become more significant with climate change. With

greater wave energy closer to shore as a consequence of sea levels rising, the potential exists for even greater levels of mobility of the beach material, and thus exacerbating the factors described in this article. Awareness of this potential gives scope to future-proof new works and reduce requirements for their future maintenance and repair.

Bastidas-Arteaga and Schoefs (2015) look at asset management in the context of reinforced concrete structures. They focus upon the developments around the concept of sustainable maintenance when significant repairs are required, proposing a methodology for evaluating and improving maintenance strategies, developed within the framework of the Mareo project. Usefully, the model presented considers the optimisation of such strategies from the perspectives of cost and environmental implications.

The maintenance of an altogether different type of maritime asset is described by Thomas (2015). This paper deals with the ongoing and long-term strategy for management of a shingle embankment providing a primary sea defence against flooding. Thomas describes the approach to this project which has encouraged innovation and development of best practice, and the ability actively to change the approach to the management of this asset as a result. This paper is one of those also presented at the ICE Coastal Management Conference in Amsterdam (see the September 2015 issue (Burgess, 2015)).

Our final paper presents physical modelling studies undertaken to examine the effectiveness of tie rod anchors on open-piled berthing structures (Premalatha *et al.*, 2015). The results, which are also compared with numerical modelling analysis, indicate that the introduction of tie rod anchors can considerably improve the performance of a structure, potentially allowing a lesser cross-sectional area of pile to be used. On the theme of getting more from our assets, whether this same knowledge can be used to improve or upgrade existing structures was not part of this particular study but might be an interesting area for future consideration.

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