

## Future Surface Water Management



### **about the author ...**

Glyn Hyett is the Managing Director of specialist rainwater harvesting company 3P Technik (UK), and a founder-member and Director of the UK

Rainwater Management Association.

### **what the experts say ...**

A recent survey of more than 1,000 water industry professionals revealed wide-spread belief that the UK lags in its approach to surface water management. One of the main shortcomings identified is the current lack of an integrated approach that takes fully into account that rainfall is a valuable natural resource that needs to be managed to avoid floods, whilst at the same time meeting the supply-side needs of people, industry and the environment.

It is becoming increasingly evident that parts of the UK are experiencing exceptional levels and intensity of winter rain, leading to the local severe flooding seen very recently. According to Environment Agency analysis, this is a trend likely to worsen over coming decades, due to climate-induced changing weather patterns. Less well-publicised are the anticipated stresses on summer water supplies.

This pattern of Winter floods and Summer droughts is also highlighted in the latest Report of the International Panel on Climate Change. This further suggests that of the two, Summer

water shortages are likely to cause the greater future environmental and economic damage in the UK.

### **flood control ...**

Understandably, given recent events, political priority for the time-being is firmly focussed on the flood-avoidance side of the water management equation, with river dredging and the raising of river banks being the most popular options.

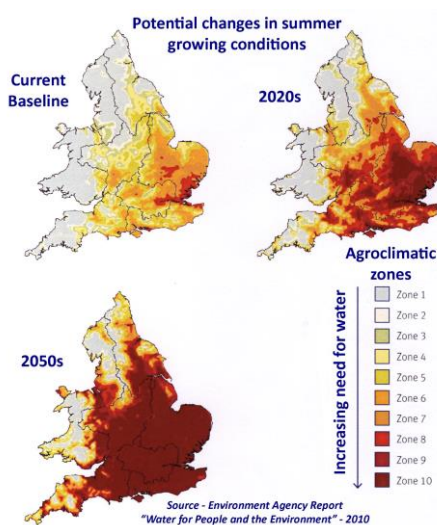
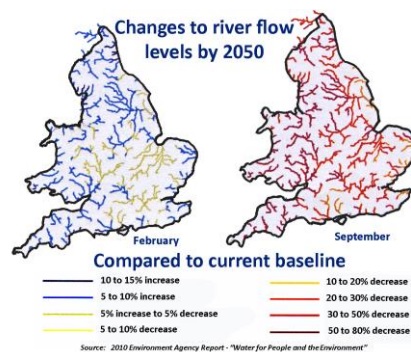
Although such measures may have a role to play, by themselves they only provide half the solution to the overall problem as they make no contribution to avoidance of subsequent water shortages, and indeed may exacerbate them.

### **vs source control ...**

Taking the farming industry as an example, its future prospects look increasingly bleak, according to Environment Agency projections of future growing conditions in the south of the UK. Even as soon as the early 2020s water supplies are expected to become a limiting factor on productivity. It is therefore in farmers' own interests, to safeguard the value of their land, by taking these predictions seriously, and starting to prepare for the future now.

One of the most obvious ways of doing this is to store sufficient surplus Winter rainfall to meet subsequent summer requirements without relying upon river extraction. The most

practical way of doing this will vary with local topography, but will inevitable involve expenditure that needs to be encouraged by agricultural policies.



A secondary, arguably primary, effect of this investment will be to reduce downstream river flows and associated flood risks; commensurate with the water being stored. This in turn would impact on flood defence plans and investment, further highlighting the need identified by professionals to take an integrated approach to surface water management. It also highlights the pressing requirement to act now, in order to build-up the water storage and re-use capacities needed to meet future flood and drought risks.

### ***sustainable drainage ...***

This would mirror the surface water management arrangements already partly in place for urban environments. It is a planning requirement that all new developments must be accompanied by “sustainable drainage system” (SuDS) proposals to ensure that they do not cause an increased incidence of down-stream flooding. Except where this can be achieved wholly through ground percolation, the typical approach is to temporarily store (attenuate) rainfall in underground storage cisterns. It is then later released at a rate with which local drainage infrastructure can cope, without giving rise to flood risks.

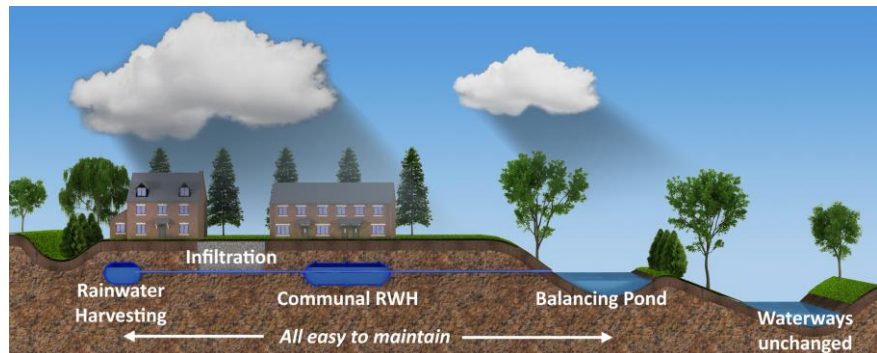
Making use of this stored water for non-potable purposes such as toilet-flushing, to help address water-shortages, has not generally been promoted, with the national SuDS Standard failing to even mention this option.

### ***best practice ...***

Taking an integrated approach to SuDS and water shortages would be much more cost-effective than treating floods and droughts as separate issues, and lead to a best practice approach along the lines illustrated.

This shows infiltration, water gardens and rainwater harvesting (RWH) being used as the primary SuDS tools. The overflow of the RWH component of the system can be used to help supply downstream communal systems; these serve properties with a low roof-to-occupancy ratio, which do not harvest sufficient rainfall to meet residents’ non-potable needs.

Balancing ponds or swales to accommodate exceptional weather events then complete a highly cost-effective system that provides a raft



of environmental and amenity benefits.

### ***meeting future challenges ...***

This approach seems to have been well-taken by the Welsh Government and the Greater London Authority (GLA); in both cases, the Public Consultation versions of their proposed SuDS Standards have listed water re-use as the best way for new developments to avoid increasing down-stream flood risks.

Interestingly, the GLA consultation goes even further by flagging-up surface water management as such a significant factor in and around London, that storm-water disposal may need to be metered and charged separately, even on existing commercial premises.

Were this to happen, the economics of water re-use would be transformed in the Capital, as is already the case in Germany where domestic water charges are double those of the UK, and commercial charges are four-fold.

*For further information see [www.ukrma.org](http://www.ukrma.org)*