Title:
What about Quality SWMPs?
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Author :
Renuka Gunasekara (Technical Director, Hyder Consulting)

Contact Details:
Hyder Consulting UK Ltd
Eco Innovation Centre
Peterscourt, City Road, Peterborough
Cambridgeshire, PE1 1SA
Email: Renuka.Gunasekara@hyderconsulting.com
Tel: +44 (0) 1733 294 559
Mob: +44 (0)7793 187700

Abstract

Surface Water Management Plans (SWMPs) have been an integral part of the UK flood risk management works in recent times. This paper asks whether the SWMPs carried out to date have missed out on delivering a more holistic approach to managing our water environment. SWMPs so far have tended to focus on the water quantity drivers and have aimed at delivering improvements to the flooding risk experienced or predicted across our communities. Their development process and options investigated to help resolve identified flooding issues generally aims to promote sustainability in most forms, including the delivery of space for water through the green and blue infrastructural interventions. However, the opportunities to join up the water quality and ecology drivers in the face of tightening legal requirements that the UK face in the form of the Water Framework Directive (WFD) and Bathing Water Directive (BWD) have largely been missed.

This paper will explore the current barriers to integrating flood risk reduction along with water quality and ecological improvements. The paper will explore potential opportunities that will expand on what should be included in future SWMPs and their action plans to best ensure the protection of the water environment through the sustainable and holistic management of water. This will involve:

- Flood risk
- Storm water pollution
- Water efficiency
- Hydro-geomorphology
- Habitat protection and enhancement
- Community aspirations

Key Words

Surface Water Management Plans, Water Framework Directive, Sustainable Drainage Systems, Flood Risk, Water Quality, Ecology and Asset Management

Introduction

A large focus of the current generation of SWMPS has been about separating out the surface water from the foul and combined networks that have served our urban communities over many generations. However, this also has the potential, unchecked to cause significant environmental degradation from the storm water discharges due to the historical approach to unsympathetic treatment of the surface water drainage within development and transportation-based projects.

If undertaken appropriately, SWMPs could help identify opportunities for removing storm water from the foul/combined systems that serve large urbanised areas across many UK communities, helping to reduce the quantities mixing with foul waters hence reducing the volumetric demands on our Urban Waste Water Treatment Works. However, this needs to be done holistically and systematically. This is because although removal of the urban storm water from the below ground combined or foul drainage system will enable other sustainability criteria and drivers to be met it

could also inadvertently result in pollution of our watercourses unless asset improvements and environmental enhancements are made to our surface water networks and contributing sources concurrently.

It is essential that on-going, new or future iterations of SWMPs should have equal regard to water quality and ecological aspects of the urban water environment rather than just focussing on flood risk reduction. This will need a robust methodology as well as a funding mechanism to deliver asset improvements in a largely forgotten sector of our below ground infrastructure, such as surface water sewers and culverted watercourses. It is envisaged that this approach delivers a more naturalised approach to storm water management in close conjunction with well integrated retrofit Sustainable Drainage Systems (SuDS) and river restoration schemes. This is key to the success and adaptability of our urban environments where increasing populations, future climatic changes, legislation and the increasing aspirations of stakeholders and communities are placing greater and greater demands on our water environments.

The paper will explore these issues and opportunities whilst referring to local, national and international experience and the lessons learned.

Current Barriers

Some of the perceived key barriers that prevent producing Quality SWMPs are:

- Outdated SWMP guidance and working practices that need refreshment to ensure SWMPs are not only addressing flood risk management but provide key policies, tools and action plans to promote integrated water management.

- Flood and Coastal Erosion Risk Management Partnership funding/ Flood Defence Grant in Aid (FDGiA) process is currently largely focussed on flood risk reduction benefits to residential properties – limited funding opportunities and incentives currently exist to deliver water quality objectives as fully integrated plans and schemes unless clear and attractive funding models for them can be made available.

- Lack of involvement and coordinated approaches with the water companies and other Environment Agency functions to maximise water quality and ecology improvements through their National Environment Programme, Asset Management Plan (AMP) and WFD initiatives.

- Usual tendency for continuous focus on dealing with point discharge pollution improvements rather than diffuse pollution – this is partly due to lack of resources and clear funding and delivery models to tackle diffuse pollution risk.

- Removal of contaminated in-situ river bed sediment is a quick win with measurable short term results, but a dicey investment unless upstream practices are also improved.

- Lack of statutory need to ensure treatment volumes and compliance with water quality parameters for new developments as part of normal planning approval or SuDS approval process.

- Resource constraints in delivering WFD targets/initiatives along with skills gaps and limitations on knowledge sharing from international and national best practice examples.

Future Opportunities

- Identify and prioritise the urban watercourses and surface water outfalls that are currently failing to meet good ecological status by jointly working with water companies, Environment Agency and Natural England. The big drive in AMP6 to address WFD requirements should provide a welcome opportunity to revamp the objectives and purpose of SWMPs to address such objectives so that key opportunities are not missed out.

- Make linkage to community led improvement projects that can be funded from funds from Defra, Heritage Lottery Fund, Water Companies and other Environment Agency current initiatives such as Midlands Urban Rivers Community Initiative (MURCI Waters) and Catchment Restoration Fund. We need to work jointly and also learn from the experience gained from the recent and on-going projects in order to maximise funding opportunities and the delivery of positive outcomes.

- MURCI Waters is a £1M programme that will be delivered between 2012/13 in partnership with communities, local authorities, businesses and the voluntary sector to trial and measure the success of innovative solutions to tackle the root causes and behaviours of urban diffuse pollution.

- Catchment Restoration Fund set up by Defra/ Environment Agency supports projects which improve watercourses and reduce diffuse pollution. A £28M fund, providing up to £10M each year, has been allocated for the projects to be delivered between 2012 and 2015. For example, as part of Telford Catchment Restoration Project Shropshire Wildlife Trust will be working closely with Telford and Wrekin Council, Severn Trent Water and a range of community partners to not only deliver physical improvements to two urban rivers but bring home important messages about water and its associated ecology and how we impact upon its quality and quantity.

  Unlike rural catchments it is Urban Diffuse Pollution that will be the focus of the Telford project. The following impacts will be tackled on the two worst catchments first, Lydebrook and Madbrook.
  - Run-off from road and the urban environment
  - Domestic foul to surface water sewage misconnections
  - Contaminated in-situ river bed sediment
  - Run-off from trading and industrial estates
  - Discharges from Combined Sewer Overflows
  - Septic tanks and sewage treatment plants
  - Mine waters from redundant workings

- The role of SuDS Retrofit Projects in urban towns should not be underestimated – For example, Hyder is currently developing on behalf of Cambridgeshire County Council and Cambridge City Council pioneering retrofit projects in Cambridge following the completion of Cambridge and Milton Detailed SWMP.

- The use of MUSIC modelling to plan and inform integrated SuDS strategies for large scale developments that account for rain water harvesting, water quality and flood risk benefits – For example, Hyder's recent work in Broadland District clearly demonstrated that MUSIC is an effective tool to design conceptual SuDS strategies as have done in Australia and New Zealand for a number of years in conjunction with the Water Sensitive Urban Design (WSUD). This approach can be further adapted in the UK so that developers will need to demonstrate how their proposals meet specified water quality parameters/ improvements as well as flood risk.

- Water companies, Local Authorities and Environment Agency can also use MUSIC models as a decision making tool to steer, develop and monitor the effectiveness of their future decisions, strategies and plans in meeting WFD objectives.

- Strengthen the emerging SuDS National Standards to ensure the compliance of water quality targets as well as water quantity - For example, should water companies and the Environment Agency pass the message 'help us share the load' to Defra and Ofwat, up to the Minister, and then back down to SuDS Approving Bodies(SABs) through a revised and more strengthened National Standards for SuDS approval process that has better defined water quality parameters in line with the WFD objectives for the water bodies?

- Provide more support to Lead Local Flood Authorities, County Highways Teams and Planning Authorities through capacity building workshops and funding streams to get up to

speed in terms of their Flood and Water Management Act 2010 and WFD responsibilities. Consider potential opportunities for incorporating SuDS retrofits to deal with highways runoff.

- Facilitate additional incentives and funding opportunities to developer and community led schemes so that benefits can be derived more widely.

Conclusions

Diffuse pollution, quantity, flow dynamics and hydromorphology are key issues for many urban watercourses and Heavily Modified Water Bodies that are currently failing to meet good ecological status or potential. A more holistic SWMP and SuDS approach involving timely action, suitable funding and legislative framework would allow a better resolution as to how much source control and attenuation is provided throughout the catchment to assist with this key issue.

Future SWMPs should have more linkage to water quality, ecology and wider sustainability drivers – this should help avoiding the future threat of future penalties/ infraction proceedings to the UK plc from the EU for failing to improve the WFD objectives for the waterbodies whilst ensuring a quality water environment that we all can live and enjoy.

All new development should manage surface water through various SuDS treatment trains similar to existing guidance such as Water Sensitive Urban Design (WSUD) in Australia and Sewers for Scotland (SuDS for Scotland) in which there are treatment volume drivers behind solution development.

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