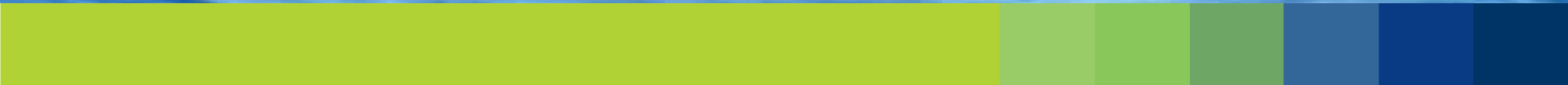
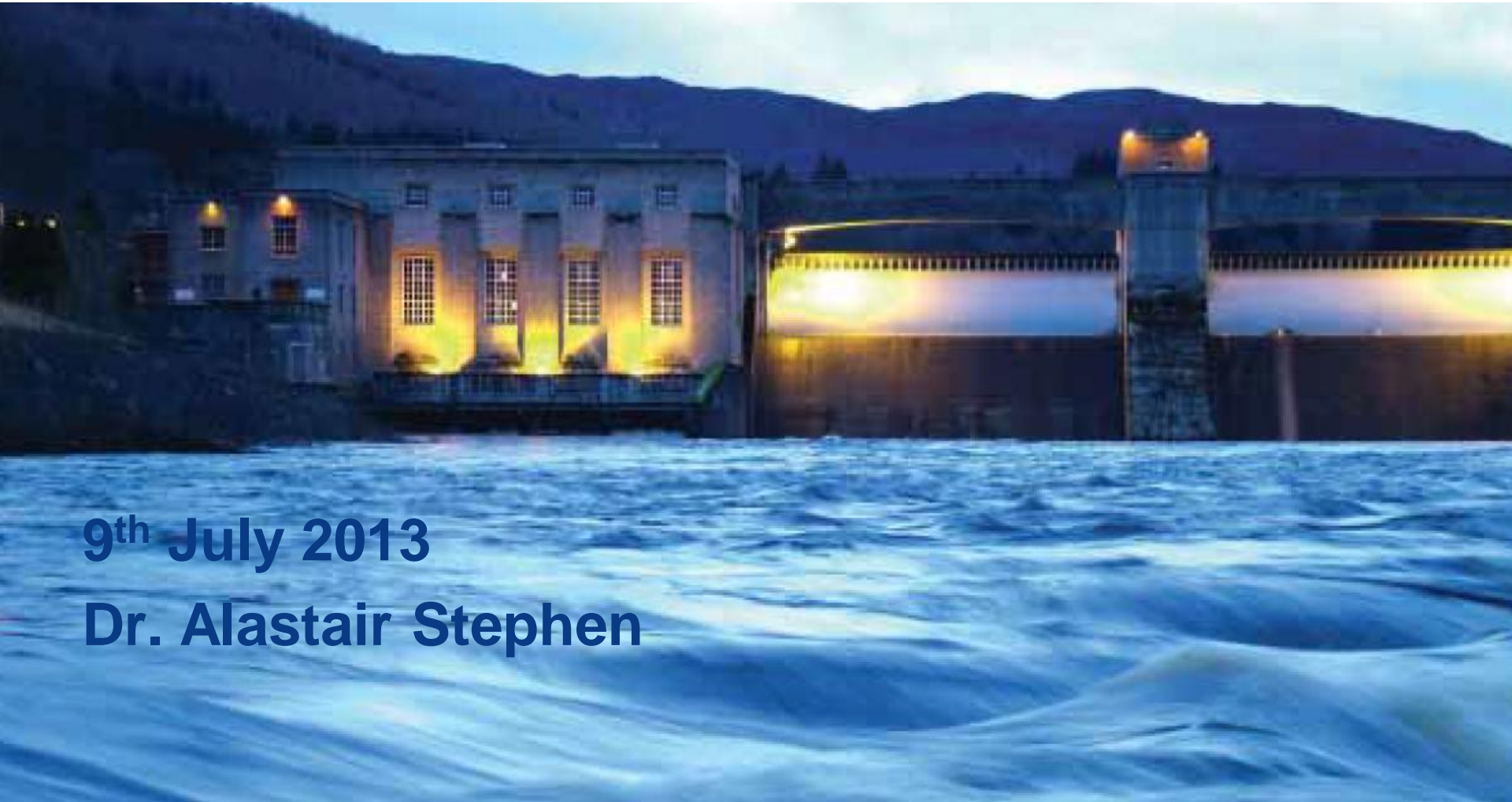


Putting the 'E' back into GEP

9th July 2013

Dr. Alastair Stephen



Overview

- SSE is greatly concerned by the UKTAG proposals and disappointed that the guidance:
 - is based on hydrology and not on biology
 - specifies ‘minimum’ flows that are well in excess of those that have been shown to be effective
 - would have a scale of impact on operators that has not been assessed and which is not supported by the evidence
- We can only give a high level overview in a 15 min presentation but we will provide the associated detail in our written response.

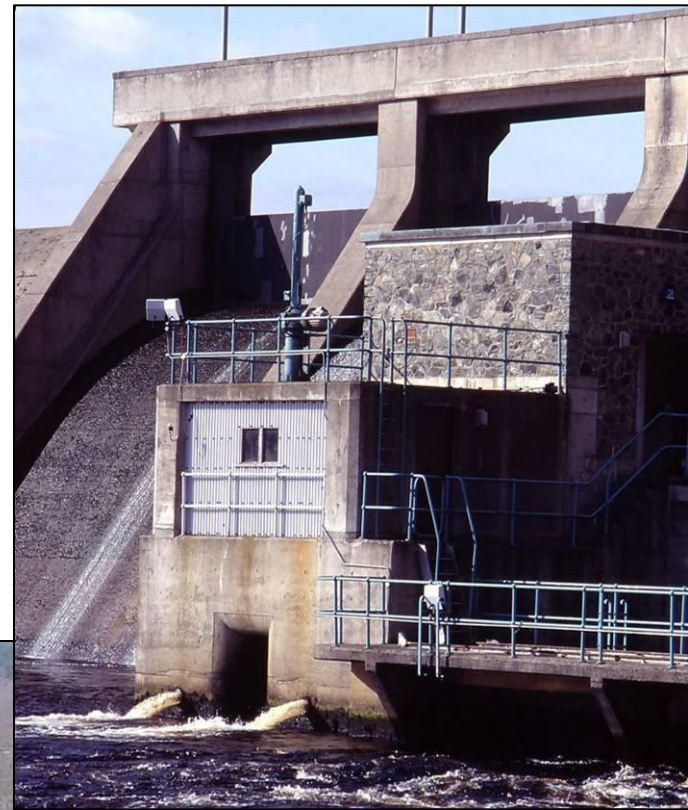
SSE Hydro

- SSE is a leading energy utility company operating mainly in UK and Ireland including electricity and gas production, distribution and supply.
- The largest generator of renewable electricity and by far the largest of hydro.
- SSE currently own and operate 1,150 MW conventional hydro and 300 MW pump storage across the North and West of Scotland.
- This year is the 70th anniversary of the Hydro-Electric Development (Scotland) Act. Hydro is a proven, reliable and controllable form of renewable generation.
- SSE recently announced the new Glassa storage hydro-power scheme and we are also seeking consent for a major new pump storage facility.
- The development of wind and other variable generation is increasing the importance of storage hydro within the overall renewable energy mix.



Our hydro operations

- 28 schemes from simple run of river to major storage cascade schemes
- Existing mitigation is highly developed for the time of construction:
 - compensation flows
 - ‘hands off’ flows
 - freshets
 - fish passes
 - fish counters
 - smolt screens
 - smolt traps
 - tailrace screens
 - adult fish traps
 - the UK’s largest wild fish hatchery

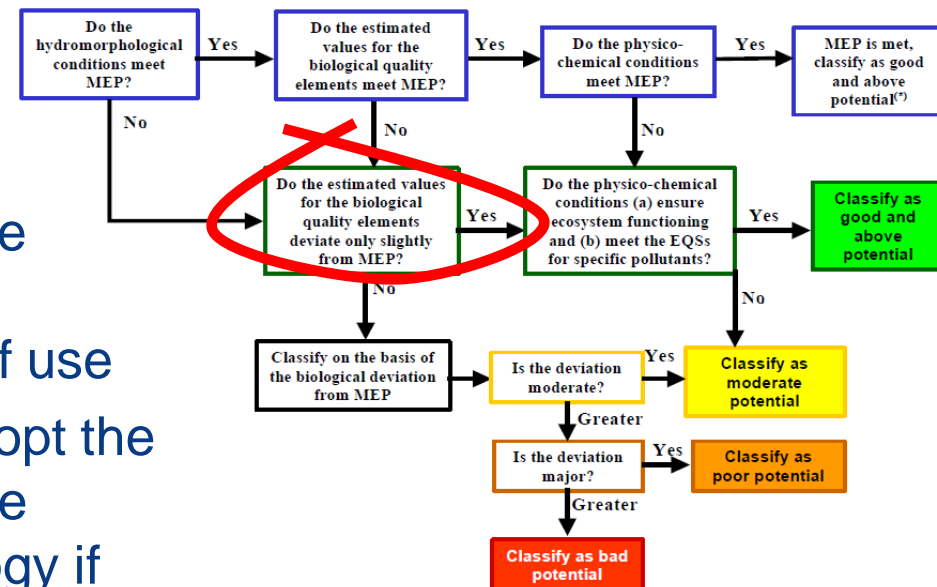


What SSE has been doing

- SSE has proactively been engaged with these issues since 2003
- In 2006 we proposed major alterations to 3 of our largest schemes to deliver ecological benefits for the 1st RBMP
- We have been collecting data at our sites and promoting research
- Over the past year, in partnership with SEPA and the EA, we have been supporting SNIFFER research into ecological indicators of poor and bad status
- All of this has shown that the relationships between hydrology, morphology and biology are complex and poorly understood
- This has lead us to conclude that:
 - The continuing focus on hydrology based standards is not justified by the current science
 - If hydrology doesn't work then the only sensible approach is to measure the thing we are all interested in – the biology itself

Flows and Good Ecological Potential

- The WFD specifically recognises hydropower as an essential human use of water
- For waterbodies affected by hydropower (HMWB) the objective is GEP
- The WFD specifies the quality elements to be used for the classification of ecological status and potential:
 - Biological elements; supported by
 - Hydro-morphological elements
- GEP is the best ecological outcome that can reasonably be achieved given the existing type and scale of use
- Although the UK has chosen to adopt the so called “Alternative Approach” the outcome still needs to be the ecology if the process is to be judged a success



UKTAG Draft Recommendations

- Focus is on hydrology with some minor changes based on morphology:
 - Defines a single ‘default’ flow regime for GEP at all sites
 - Six building blocks of fixed Q values that are applied universally
 - All the blocks must be in place unless an ‘exemption’ is permitted
 - The default Q values may be increased or decreased based on morphological criteria which are themselves not firmly linked to biology
- The ‘default’ flow regime looks like an extreme version of Maximum EP
- The evidence shows that no Q values can be applied universally as the natural physical and ecological conditions are far too diverse
- It does not take account of biological evidence or the existing ecological quality
- Many hydro sites retain their natural mix of species after decades in flow conditions far lower than the ‘default’ values
- The costs of this ‘one size fits all’ precautionary approach have not been assessed but will be enormous both at an individual site level and at the national scale

So what should the guidance say?

- A WFD compliant approach should:
 1. Start from the existing biological quality and identify where there are significant ecological problems (hydrology standards could have a role to play as a trigger for biological investigation)
 2. Identify the possible measures to address these problems and select the most efficient solution (this could include a site assessment of the flows needed to deliver a sustainable ecology)
 3. Implement these measures along with post intervention monitoring
 4. Revisit sites where the monitoring shows the ecology has not significantly improved
- We are often told that the scale of the problem means this approach isn't possible
- The truth is that there are relatively few sites, perhaps a few dozen over the next 15 years, where this approach would be needed
- The costs of getting it wrong at these major sites far outweigh the costs of doing it right!

Conclusion

- The proposed UKTAG approach relies solely on hydro-morphological quality elements even though the science linking these to biology is wholly inadequate
- The approach is not consistent with the WFD as ecology should be the objective - hydrology is only important to the extent that it delivers this ecology
- From knowledge of our own sites it seems inevitable that many, perhaps the majority, of SSE sites currently at GEP would be downgraded without any evidence showing an ecological problem
- The principles of Better Regulation require that such a major change in the regulatory approach must be subject to a Regulatory Impact Assessment
- What would be the effect of applying the 'default' flow regime at all reservoirs across the UK?