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## **WWF-UK Case study: the financial implications of restoring sustainable abstraction to the River Itchen**

### ***Introduction***

The purpose of this case study is to illustrate the financial implications of reducing abstraction in order to protect the natural environment in line with the Government's obligations. It considers the headline financial estimates associated with pursuing options to reduce abstraction, as identified in the Environment Agency's *Review of Consents*, in order to protect ecosystems today. It is suggested that, in a future marked by climate change, the pressures of abstraction will be even greater with further action required to maintain the status quo.

### ***Background***

The River Itchen is an iconic river that rises from the chalk aquifer of the Hampshire Downs, flows through the historic city of Winchester, and enters the English Channel via the Solent at Southampton. The river has been designated as a Special Area of Conservation (SAC) under the EU Habitats Directive by virtue of the international significance of the chalk stream ecology.

### ***Impact on abstraction for public water supply***

The Environment Agency has recently completed a Habitats Directive Stage 4 review of consents as part of its assessment of abstractions at the River Itchen SAC. Actions included modifications to four public water supply licences to limit the volume of water that can be taken during summer months, and imposing a "hands off flow" (stopping all abstraction when flows fall below 198 Ml/d), which together will enhance protection of the river ecology.

The proposed modifications will have a significant impact on Southern Water's ability to supply water.

In its draft Water Resource Management Plan (WRMP)<sup>1</sup>, Southern Water estimated that there would be a need for reductions in deployable output (DO) of 104 Ml per day for the minimum resource period (MDO) and 86 Ml per day for the peak demand period (PDO) to achieve the "hands off flow" requirements.

The required reduction in abstraction from the Itchen potentially impacts the supply-demand balance in Southern Water's western area (mainly in the Hampshire South Water Resource Zone (WRZ), but also the transfer from the Hampshire South WRZ to the Isle of Wight).

### ***Options for addressing the impact***

Southern Water investigated options for maintaining the supply-demand balance while employing the Itchen sustainability reductions. It concluded that the additional cost would be an estimated £63.25 million. (It is worth noting that this exceeds the Environment Agency's

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<sup>1</sup> Southern Water, 2008. *Water Resources Management Plan*.

[http://www.southernwater.co.uk/Environment/managingResources/publicConsultation.asp?lang=\\_e](http://www.southernwater.co.uk/Environment/managingResources/publicConsultation.asp?lang=_e) [accessed 6 Feb 2009].

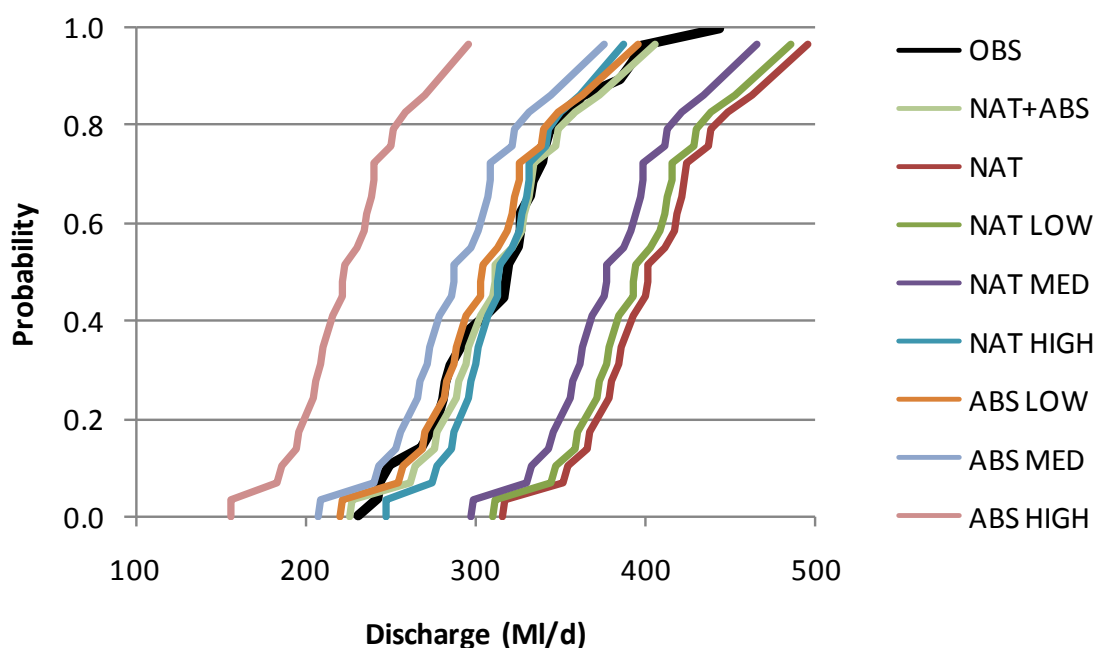
estimated licence compensation cost of £45.5 million for *Restoring Sustainable Abstraction* in the entire Southern region.) Options considered included increasing treatment capacities at existing works; relocating a groundwater abstraction point; and adding a wastewater recycling scheme on the Isle of Wight (in addition to implementing universal metering by 2015). Southern Water did not include these in its preferred water resources strategy and is continuing to assess options for meeting the Itchen sustainability reductions in discussion with the Environment Agency. It is likely that the options will be modified before the final WRMP is agreed.

### **Climate change variability**

Climate change may pose additional threats to chalk streams by the 2080s<sup>2</sup>: warmer, wetter winters; warmer, dryer summers; and more frequent and severe extreme events (such as droughts and intense rainfall).

The graph below shows projected mean low flows and their probability of occurrence at Allbrook and Highbridge on the Itchen<sup>3</sup>. The graph shows that forecast naturalised flows (i.e. no abstraction) under a high climate change scenario (represented on the graph as “*NAT HIGH*”) are broadly equivalent to current observed flows (i.e. with current levels of abstraction, “*NAT + ABS*”). As abstraction is added into the climate change models, the projected river flows progressively decrease. Under a high climate change and high abstraction scenario (“*ABS HIGH*”), flow levels are likely to approach the “hands off” flow level with increasing frequency.

This has significant implications both for the natural environment and for the public water supply. Substantial reductions in abstraction will be needed to counteract projected climate change impacts on low flows in the River Itchen, even by the 2020s.



<sup>2</sup> UKCIP02

<sup>3</sup> R. Wilby (2008), Briefing note on long-term water balance and management issues in the River Itchen, prepared on behalf of WWF-UK