

Abstraction reform and water security: the view from England and Wales

Chad Staddon summarises past and future law and practice for abstracting water.

We take water from the natural environment for all kinds of reasons: households, farms and industries all depend on water resources. The impacts of abstracting water directly from rivers or underground aquifers can be wide-ranging, including reduced water flow or quality leading to habitat loss or lack of availability for other human activities. Poorly managed abstraction systems can also result in water being used for irrational or suboptimal purposes. We already face challenges in water availability that put pressure on some of the existing 20,000+ abstraction licences currently in existence in England and Wales. Many catchments in the UK have no spare water that can be allocated for further abstraction and existing allocations are also under climate-change-related pressure.

Managing our available water resources is likely to become more of a challenge in the future with an increasingly varied climate and increased demand for water from a growing population. Yet water is vital to the economy to generate power, run industries and grow food. This is why water abstraction, in most countries, is monitored and licensed by national or regional agencies. Of course in some countries, for example the USA, legal principles such as riparianism (rights that come with ownership of land alongside a water course) and prior appropriation (rights that come with having been the first to abstract water historically) may mean that state

agencies are very constrained in their ability to control abstraction¹. In England and Wales water abstraction management is currently undergoing a significant rethink, which may result in a new system after 2015.

A SHORT HISTORY OF ABSTRACTION MANAGEMENT

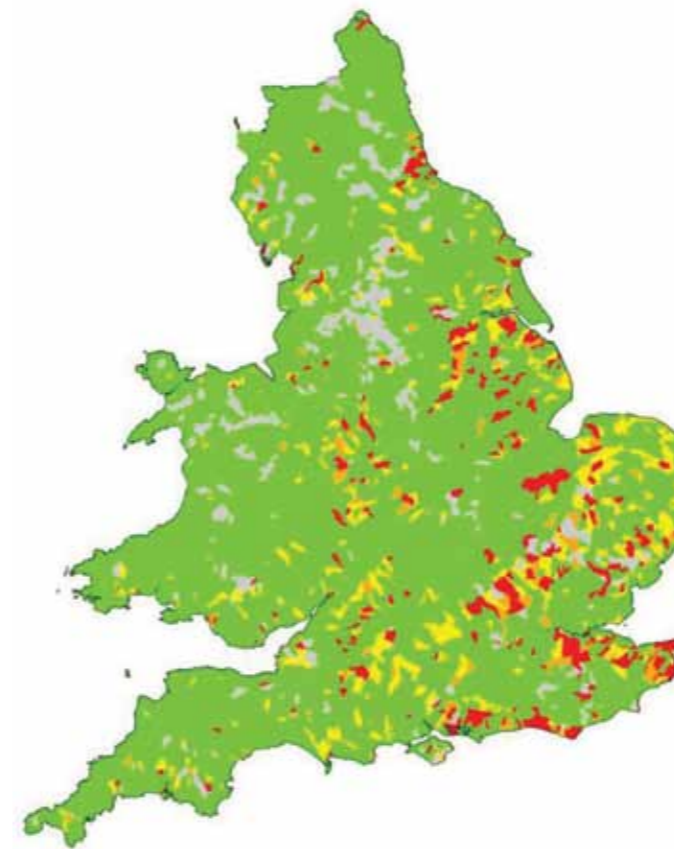
Prior to the passage of specific legislation covering abstraction, water users could only appeal to common law principles of riparianism and prior appropriation. The current system for managing abstraction of water from rivers and aquifers in England and Wales is a product of the Water Resources Act (1963) which gave most abstractors a licence to take a fixed volume of water, regardless of availability. Much of the water that is licensed in this way is not actually used, but the regulator cannot make it available to others who may need it – the licenced volumes are not flexible or easily transferrable.

A May 1997 Water Summit between water companies, the Environment Agency and key stakeholders led to an agreement that there should be a full review of the abstraction licensing system. This led the Government to order the Environment Agency to use its existing powers to change environmentally harmful licences and to prepare new legislation covering abstraction reform.

Following the 1997 Water Summit, the Environment Agency launched two processes for reviewing existing abstraction licences. Through the Restoring Sustainable Abstraction (RSA) and Catchment Abstraction Management System (CAMS), authorities in England and Wales have intensified their work to make abstraction sustainable by varying and removing abstraction licences. The RSA process looked particularly at water bodies located in or near sites that are affected by the EC Habitats Directive, Sites of Specific Scientific Interest (SSSIs) or other conservation areas. The CAMS process involved developing and implementing a consistent and structured approach to local water resources management, recognising the reasonable needs of abstractors and our growing knowledge about the needs of the environment.

CAMS are strategies for management of water resources at a local level and in particular for striking a better and more flexible balance between the needs of abstractors, other water users and the aquatic environment in consultation with the local community and interested parties. CAMS are also the mechanism for managing time-limited licences by determining whether they should be renewed and, if so, on what terms.

In this way the Environment Agency has already changed 77 licences in England since 2008, returning around 75 billion litres of water per year to the environment (the equivalent of more than 60,000 Wembley Stadiums or 100 Lake Windermere). Similarly, in Wales, 44 abstraction



▲ Figure 1. Recent actual compliance with environmental flow indicators (EFIs). (© Environment agency)

licences have already been changed. Environment Agency statistics show that between 2002 and 2011 only an average of 45 per cent of the annual total of water licensed for abstractions in England and Wales was actually abstracted. Unused abstractions can, where there are competing uses, mean that the economy or society suffer. Conversely if all this unused water was actually abstracted, there could be significant deterioration of the environment.

THE WATER ACT (2003)

The Water Act (2003) made specific provision for:

- time limits for all new abstraction licences;
- the facility to revoke abstraction licences causing serious environmental damage without compensation;
- greater flexibility to raise or lower licensing thresholds; small and environmentally insignificant abstractions (under 20 m³/day) deregulated;

- licensing extended to abstractors of significant quantities presently outside the licensing system; and
- water company drought plans and water resource management plans became a statutory requirement (both were previously produced voluntarily).

These provisions strengthened the RSA process in particular. Investigations under the RSA programme have helped to identify improvements that will contribute to meeting the UK's objectives under the European Water Framework Directive (WFD). This came into force in December 2000 and became UK law in December 2003. CAMS data is also central to the preparation of River Basin Management Plans (RBMPs) under the WFD.

THE FUTURE OF LICENSING

Currently, abstractions over 20 m³ (20,000 litres) per day require an abstraction licence. Applications are considered with reference to the local CAMS data and the current RBMP, as filed with the EC. New licences will generally be time limited and renewable according to the stipulations of the Water Act 2003. Time-limited licences will be replaced, providing:

- the abstraction is environmentally sustainable – investigations by the EA will identify where sustainability may be in question;
- there is continued justification of need – licence holders will need to demonstrate that they still have reasonable need for water, and whether the quantity is still justified; and
- water is being used efficiently – this means using the right quantity of water in the right place at the right time. The UK Government expects abstractors to use water in a responsible and efficient way, and will expect them to provide evidence of this when applying for a replacement licence.

REFORM OF ABSTRACTION MANAGEMENT FUTURE

Note that the EA is specifically empowered to make judgments about the rationality and efficiency of any given licence applicant's proposed use. The map indicates the areas (in orange and red) where licence renewal applications are likely to encounter difficulties related to insufficient environmental flow.

The UK Government committed to reform of the water abstraction management system in England in the Natural Environment White Paper, *The Natural Step*, in June 2011 and then set out the proposed direction, principles and process for reform in the Water White Paper, *Water for Life*, in December 2011. The reforms proposed by Defra in a consultation document published in December 2013, but not included in the recently passed Water Act 2014, would build on this action to tackle

unsustainable abstraction and are designed to make the system more flexible and resilient to future pressures. Key intentions are to:

- increase the amount of water that can be used by systematically linking access to water to water availability;
- incentivise abstractors to manage water efficiently;
- help abstractors to trade available water effectively, ensuring that we get the most value out of our water and do not waste water that could be used;
- ensure we have a more effective process to review licences, striking the right balance between providing regulatory certainty for abstractors and managing environmental risk; and
- incentivise abstractors to manage risks from future pressures on water resources, increasing their own resilience and that of river catchments.



Figure 2. The River Itchen, Winchester. (© Plinsworth96)

CURRENT SYSTEM PLUS AND WATER SHARES

Two main options for reform, labelled Current System Plus and Water Shares went out to public consultation in early 2014. Under Current System Plus, the regulator would continue to use the tools currently applied to some licences (under the powers granted in the Water Act 2003) to reduce or stop abstraction to leave enough water for the environment or other abstractors when flows are low.

These tools would be refined, strengthening the link between water availability and permitted abstraction to allow more water to be abstracted when more is available and improve environmental protection, particularly at very low flows – implying a dynamic system of abstraction licensing. Defra would also make it easier for abstractors to trade water with each other, by pre-approving temporary low-risk trades.

The Water Shares option would be a bigger change from the current system. Abstractors would be allocated a share in the available water resource, rather than an absolute amount, encouraging abstractors to take a shared responsibility for water resources in catchments. This option would allow for pre-approval of shorter-term trading between abstractors

and of a wider range of trades. Lumbroso *et al.*'s (2014) report² on research with abstractors in eastern England showed that stakeholders were cautiously interested in the benefits offered by both methods, especially the ability to trade water at short notice.

Under either reform option the Government seeks to avoid the rigidities of the previous permitting regimes (such as seasonal licences that do not recognise seasonal variation in flow), arbitrary time spans (time-limited licences are currently generally renewable after 12 years) and disincentives for permit holders to trade amongst themselves to seek the highest and best use for water. The Government also seeks to introduce “fairer” and “more accurate” pricing for water through associated charging for abstraction licences, although there is little evidence worldwide for significant price sensitivity amongst water abstraction licencees³.

CASE STUDY: THE RIVER ITCHEN IN WILTSHIRE AND DORSET

The Itchen (see Figure 2) is often thought of as the iconic chalk stream. Its crystal-clear waters spring from the chalk hills in the South Downs National Park before journeying for 30 miles or so down to join the sea at Southampton.

In total, 217 million litres per day (ML/d) are licensed for public supply in the Itchen catchment, although to date these licences have never been used to their maximum allowance. After it is used in public supply, the majority of the water is returned to the river at Chickenhall sewage works, close to the tidal limit. Public water supply represents 24 per cent of the total abstraction volume licensed within the catchment. Other main abstractors include watercress farming (licensed for 99 ML/d) and fish farming (licensed for 184 ML/d). While these sectors are high abstractors, in effect they have almost no impact on water quantity in the river as the water is returned to the river close to where it was abstracted.

Over-abstraction has long been noted as an issue affecting the lower stretch of the Itchen. The Environment Agency's CAMS (2013)⁴ has designated the River Itchen as “over abstracted”, particularly because of the impacts on the lower stretch of the river (albeit some of the upper reaches have “water available”). In the lower river, below Otterbourne, CAMS showed that during the lowest flow periods, historical abstraction was resulting in river flows at 21.8 ML/d less than the sustainable level. A low

flow is generally accepted to be a flow that is exceeded 95 per cent of the time; this is called a Q95 flow. Average annual abstraction on the lower river is only about half that allowed by the current licences. If the full licence was taken, flows would not meet sustainable levels for much longer periods, and the deficit between environmental and actual flow levels during the lowest flow periods (Q95) would be much greater.

Thus under the RSA and CAMS processes, Defra has imposed abstraction licence reductions on the two largest abstractors, Southern Water and Portsmouth Water. Both companies have subsequently been required to

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develop new security-of-supply programmes to make up potential low-flow deficits, reflected in their water resource management plans.

CONCLUDING COMMENTS

An important by-product of a comprehensive abstraction licensing system such as the one operated in England and Wales is the need for ongoing monitoring of the licensed abstractions and their environmental impact. This can contribute to a fuller understanding of the finer mechanisms and processes impacting on the water environment and resultant adjustment of licences especially when linked to processes such as RSA and CAMS. As discussed above, however, the current system does require reform, not least in recognition of the much lower volumes of water available in many catchments of climate change and better environmental science.

One debate involves the role of other tiers of government in the abstraction licensing process. Adeloyle and Low (1996) noted that in Germany and Switzerland abstraction licensing is operated at the Lander (county) level, in Luxembourg, by central government, in Switzerland, by the Canton and in Italy by the water service authority⁵. Cook *et al.* (2013) note that devolution of decision-making and involvement of non-governmental organisations (as mandated in the WFD, 2000) is also challenging the prevailing top-down models of abstraction decision-making in many developed economies around the world⁶.

Other important drivers relate to rising concern about

the links between water, food and energy, the so-called “water–food–energy security nexus”. The UK will need to decide whether it wants to develop an abstraction management system based on the recognition that some uses of water – for food and energy – are more important than others. In the case of energy-water relations such considerations are further complicated by potential shale gas development in the UK as this energy extraction technology uses considerable volumes of water (an issue discussed in Brown's contribution to this).

Parliament has signalled a direction of travel in these matters, based on greater competition, but it is likely to be well after the spring 2015 general elections before we see new legislation. **ES**

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