



Defra

Reforming the Water Abstraction Management System

March 2014

Background to CIWEM

The Chartered Institution of Water and Environmental Management (CIWEM) is the leading professional and qualifying body for those who are responsible for the management of environmental assets. The Institution provides independent comment on a wide range of issues related to water and environmental management, environmental resilience and sustainable development.

CIWEM welcomes the opportunity to submit this written evidence to Defra on reforming the water abstraction management system. In formulating this response we have consulted with our members that work in water resource management, hosted a full day workshop with the British Hydrological Society on the reform process and actively participated in the Government's own workshops.

CIWEM does not hold an abstraction licence; rather we represent many members in the field of water resources development and water abstractions. Whilst representing themselves as individuals, our Water Resources Expert Panel garners experience from those working for the Government, regulators, water companies, nongovernmental organisations and a number of leading consultancy companies.

Summary of key points

- CIWEM supports the need for abstraction reform. The present system will not cope with the changing needs of people, business, agriculture and the environment or from the future threats of population growth and climate change.
- Water should be valued more highly. Water resources need to be managed and allocated to take account of their availability and their value to society.
- Abstraction should be charged by the volume taken. This would encourage abstractors to take only what they need and could leave more for others and the environment.
- Abstraction licensing is a long term measure. It is appropriate to put in place a system which can provide a sound basis for many years ahead.
- We favour the **Water Shares** approach rather than the **Current System Plus** as being more appropriate in the longer term.
- The Restoring Sustainable Abstraction (RSA) programme needs to be fully completed before any abstraction reform proposals are implemented. This will prevent any unsustainable water resource volumes being transitioned into the new system.
- We do not support the establishment of a water reserve. A reserve would reduce the resilience of existing abstractors and is likely to have adverse environmental impacts.

General Comments

CIWEM's views in this consultation are set out within the context of the statutory duty upon public water supply companies to provide supplies to those who demand them. We consider there to be a need to make special provisions for water companies in the design dry conditions that constitute their key planning scenario.

Of the two options in the consultation, CIWEM believes a share-based system (Water Shares) is preferable to an allocation-based one (Current System Plus) on the grounds that sharing should promote collaborative behaviour between abstractors.

We are drawn to the benefits of sharing the water available for abstraction between abstractors in ways that recognise the different demand profiles of users¹ and the *value* of different uses.

CIWEM notes that the distinction between a share-based system and an allocation-based system will tend to disappear when available water is in short supply and particularly when drought measures come into play.

An allocation based system may be perceived to guarantee an abstractor rights, irrespective of the hydrological and ecological controls that inevitably limit the volume of water available for abstraction.

We have reservations about the costs and complexities associated with the water trading elements of the Water Shares model. We are unconvinced of the volume and value of trading likely to emerge, as surplus and deficit would have to exist at the same time. We consider the risks and costs of establishing a functioning platform for trading to be too high and believe water trading should be trialled in a single pilot catchment, to provide real-world evidence on the costs and benefits.

Licensing should be based on actual flows. Abstraction entitlements should reflect the needs of the environment, which should be defined as a minimum threshold below which abstraction cannot take place. These should be set to deliver post-abstraction residual flows that meet environmental flow targets throughout the low flow range (not just in the lowest 5% of flows).

Response to the consultation questions

1. What are your views on the proposal to convert seasonal licences into abstraction permissions based on water availability?

CIWEM supports the proposal to convert seasonal licences into abstraction permissions based on water availability. In recent years we have experienced low flows in the winter and high flows in the summer. As such seasonal licences are blunt tools and are likely to be a less appropriate measure for licensing in the future.

Licensing on the basis of actual flows rather than seasons makes sense and enables abstractors to take maximum advantage of actual water resources available. The increased entitlement during high flows also seems sensible, provided provisions are made for high flows to meet environmental needs.

¹ Over the course of a year, and from wet to dry to drought year types and durations.

2. What do you think about the different proposed approaches to linking abstraction to water availability for surface water and groundwater abstractions?

We agree with the principle that abstraction should be linked with water availability; the key to getting this right will be how the quantity of water available for abstraction is calculated.

Hydrological variability means that there will also be an upper control on water available for abstraction, so the water available for abstraction will vary between a fixed or tapered ecological control and also a variable hydrological control. Each abstractor's entitlement (whether a share or an allocation) to abstract will be variable, and not fixed, and will be much lower in dry and drought spells than under average conditions. Low reliability allocations would have low or zero volumes under low flow conditions, under the Current System Plus model; whereas under the Water Shares model, all abstractors would have a proportional share in the available volume. We see merit in the Water Shares model in this instance as it has the potential for building collaboration between abstractors.

Flow is not always the determining factor to ecological health; yet water flows or levels may be used as a pragmatic and acceptable indicator for ecological metrics in the following example. The ecological base control could take the form of a regulatory minimum flow or water level value in 'basic catchments' and a graduated control in (more environmentally sensitive) 'enhanced catchments'. The levels of both controls must be set to provide appropriate protection to the environment and should be based on the maintenance of an environmental flow regime. The graduated control should be set with its *no abstraction level* no lower than that of any extant *hands off flow* control, with tapered levels set above this.

CIWEM agrees that surface water abstractions should be controlled to maintain an acceptable residual flow regime in the river system and that the time step required to ensure control should be short. We consider a daily time step to be sufficient to determine whether abstraction on a given day is or is not low flow constrained. To assess compliance with any daily maximum abstraction conditions however, we consider that abstraction quantities should be measured at no more than 15 minute intervals for reliable aggregation into daily totals.

We have some reservations on the view that because groundwater levels respond slowly to abstraction (and to recharge from rainfall), a much longer time step can be used to manage abstraction from groundwater abstraction points. Just as groundwater levels respond slowly, a decline in groundwater levels during dry spells will continue and persist and will be slow to replenish. This means that abstraction control from groundwater needs to be commenced early to provide protection to groundwater fed wetlands and streams. Reacting when groundwater has reached low levels, and/or at infrequent intervals, provides insufficient protection.

3. Would it be helpful if abstraction conditions required abstractors to gradually reduce their abstraction at low flows before stopping, rather than being just on or off?

Further consideration is needed on how this proposal would work in practical terms. There are potential compromises with either the abstractor being impacted, or the environment not receiving the same level of protection that it currently receives.

In reality an abstractor gradually reduces abstraction as the flow naturally tends to reduce to any current 'Hands off flow' limit. At present, only around one fifth of abstraction points have existing agreements to gradually reduce abstraction as flows decline. Gradual reductions in abstraction generally depend on the abstractor having variable speed rather than fixed speed pumping capacity.

The key issue regarding the imposition of gradual hands off flows is the level at which they are set and the impact they would have on water availability to the abstractor on one hand; and the protection they would afford to abstraction-sensitive sites, on the other. Water companies have stated that if hands off flows are introduced which restrict abstraction more than is currently the case, then the company's deployable output would be reduced which would be likely to require the need for investment to recover the supply/demand balance.

In order to protect the environment, the graduated control should be set with its no abstraction level no lower than that of any extant hands off flow. Permitted abstraction volumes should reduce progressively as flows or levels drop towards that no abstraction line, from some higher control.

CIWEM considers that graduated controls should be used in all environmentally sensitive situations and for all abstraction points in Environmental Flow Indicators categories 2 and 3, not just where hands off flow constraints now exist.

In Annex C, section 4.2 suggests that "*the rules to measure availability, as well as the definition of groundwater blocks, would be designed to suit local groundwater characteristics*"; however we are yet to see the results of this. Currently we do not think that enough consideration has been given to groundwater abstractions within the reform process and consultation, despite it being raised by a number of stakeholders at the beginning of the process. It appears that the issues have not been resolved because they have been considered to be too complex. We therefore request that the methodology and approach for groundwater should be reviewed as a matter of urgency.

4) Do you think the proposal to protect the environment using a regulatory minimum level at very low flows is reasonable? If not, how do you think we should protect the environment at very low flows?

The points made against question two are repeated here (in italics) to ensure they are taken into account to best effect.

We agree with the principle that abstraction should be linked with water availability; the key to getting this right will be how the quantity of water available for abstraction is calculated.

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5) What do you think of the proposal to require abstractors who discharge water close to where they take it from to continue to discharge a proportion in line with their current pattern?

CIWEM believes that discharges need to be taken into consideration as part of a catchment wide approach to appropriate abstraction. Rather than requiring discharges to continue their current pattern it seems more beneficial to consider discharges and abstractions as part of a holistic picture of catchment management and consider where the greatest benefit can be derived from the characteristics of the discharge. For instance, by reducing the quantity to facilitate a more efficient process, or by situating the discharge where it can benefit downstream abstractors.

Existing abstraction and discharge arrangements should be transitioned via obligations upon abstractors under the new system, subject to improvements in water balance preservation. Energy and carbon costs associated with abstraction and returns should also be taken into consideration in permissions and charges. Any new permissions should be subject to similar provisions.

Water companies have expressed concern that there needs to be some flexibility to ensure that this does not have the perverse effect of disincentivising water efficient activities that can reduce the amount of water discharged by making processes more efficient or by recycling water onsite. Several Water Companies' Water Resource Management Plans include the development of effluent reuse schemes to enable the treated effluent to be abstracted further up the water catchment to provide additional water supplies to meet the increasing demand for water in their supply area.

6) How best do you think water company discharges should be regulated to provide reliable water for downstream abstraction without impacting on water quality objectives or constraining flexibility in water management?

This question should not just be limited to water company discharges and should equally apply to the power generation, navigation and heating/cooling sectors as well.

Water of an acceptable quality returned at or near the point of abstraction, or upstream of it, should be taken into account in allocating abstraction permissions and charges. Effluent control standards should be prescribed for all returns.

We consider that non-consumptive use should confer high entitlement, and be subject to low charges. Water exported from one catchment to another changes the water balance of both catchments, therefore we consider inter-catchment transfers should require special permission.

Abstractors should be required to monitor the volume of abstractions as well as the volume and quality of returns at regular intervals. They should be required to report daily aggregate or average values and peak values at annual intervals. Abstractors should be obliged to report non-compliances as they occur.

7) If you are an abstractor, how would these charging proposals affect your business?

N/A, CIWEM is not an abstractor.

8) To what extent would a system that charges abstractors partly on permitted volumes and partly on actual usage (ie a two part tariff) encourage abstractors to use less water?

Abstraction should be charged by the volume taken. This would encourage abstractors to take only what they need and could leave more for others and the environment. In spite of this preference, CIWEM recognises that a two part tariff, including a standing charge and a volumetric element, would also incentivise efficient use of available resources. In either case we would like to see charges tied to water availability as well as water taken, with charges escalating as availability reduces.

9) Would quicker and easier water trading benefit abstractors now? How beneficial do you think it would be to abstractors in the future?

Quicker and easier water trading would be beneficial but we have doubts that trading will occur widely. This is because when there are those with a surplus available, demand from others is likely to be low. And when demand is high, such as in drought conditions, a surplus is likely to be limited or non-existent. We doubt that the costs and risks of establishing trading will prove to be worthwhile. It will place a burden upon those mandated to provide the enabling data and we have reservations about the capacity and capability of public authorities to manage an effective trading platform, as a trading system operator.

CIWEM considers that any move to trading should be trialled in single catchment where the demand is thought to be high; to learn lessons before a more widely based system is designed and launched.

10) To what extent do you see additional benefits in the wider range of trades that can happen under the Water Shares option, compared to the Current System Plus option?

The Water Shares option supports water trading more than the Current System Plus option. As in response to question nine, we have reservations over proceeding to trading under a Water Shares model without first conducting a real-time trial of it.

11) Do you agree that participation in abstraction trading should initially be limited to those with a direct interest in abstracting water?

Yes, participation in abstraction trading should initially be limited to those with a direct interest in abstracting water. There is a risk that external parties who have no use for the

water themselves may see it as a potentially lucrative investment. This could push up costs for all abstractors, which would in turn translate into higher costs for the public water supply and other users. Trading of water must not become a profit-driven sideline for any abstractor.

12) Do you support our proposals for a more consistent approach to making changes to abstraction conditions? If not how would you improve the proposals?

Broadly speaking, we support the proposed licence review process and consider it to be a more effective approach than the time-limited licensing approach. Our reservations about the proposed approach relate to the conditions that would trigger a review. We consider that a review should be triggered when reasonable grounds for risk of damage to the environment exist, which will need to be determined as opposed to when proof of damage exists.

We recognise the diversity of current abstraction licences and the wide range of conditions and caveats within them and appreciate the administrative challenge this poses. It makes sense that the current reform should address the full range of licences.

Whilst it is appropriate to take a consistent approach to licence reform, many of the historical conditions within licences were implemented in direct response to the specific circumstances of the site in question. Some sectors will be more severely impacted by the risk of abstraction changes than others and some will be able to adapt to changing water availability more successfully and in shorter time scales. Due to this diversity, what may appear to be a shared and equitable risk of change, may impact abstractors within a water catchment disproportionately. However we still support the Water Shares approach proposed, subject to settling the shares equitably.

The key question will be whether in an over-licensed catchment all abstractors will have to reduce their licence by the same proportion, for example by 20%, or whether the reductions should be based on economic benefits or some other consideration. This is a difficult question to answer and one that could be considered during the next round of consultation.

13) What notice periods do you think would best balance the needs of abstractors and the environment?

The notice period would need to be sufficient to give the abstractors involved time to develop alternative plans to adapt to this change. This may vary between sectors, for example water companies may need six years or more to build it into a price review and Water Resources Management Plan cycle, whereas a farmer may be able to decide annually which crops are most appropriate to the wider environmental, social and economic climate. We consider that on determination of changed licence conditions there should be at least a five year tapered transition from the current to the new conditions.

14) Do you support the proposal to remove the payment of compensation for changes to abstraction conditions and to phase out the collection of the Environmental Improvement Unit Charge through abstraction charges?

We support the removal of compensation rights on loss of licence 'rights' and the cessation of the Environmental Improvement Unit Charge, with the redistribution of any unspent accumulated funds to customers of contributory companies through price review adjustments.

The Environmental Improvement Unit Charge has been shown to be less than effective and has slowed down several Restoring Sustainable Abstraction schemes across the water industry in the recent past.

There is the potential that the compensation removal mechanism may run into a stalemate situation. The environmental gains required by the Environment Agency will only be delivered provided the licence revocation/reduction notice has, or is deemed to have, statutory force. This will be at a cost to customers paid through their water bills. If it does not have statutory force, customers may still be prepared to pay for the resource substitution costs through their bills. However, if the Environment Agency notice was not deemed to have statutory force and customers were not willing to pay for the arising costs, the changes could be challenged on cost-benefit grounds, resulting in a stalemate. This is a potential loophole which requires clarification.

15) Do you agree it is important to take measures when moving licences into the new system that would protect the environment from risks of deterioration?

It will be extremely important to protect our natural environment when moving to the new system. However the requirement of no deterioration may not be sufficient if all the existing over-licensing (including over-abstraction) issues have not been resolved beforehand. CIWEM considers standards should be set in absolute terms, rather than by reference to an existing state, which may not be satisfactory. We do however recognise that in some catchments ecological data may be lacking and this should be addressed first and foremost.

16) Would you prefer us to consider the risks in each catchment when designing the rules for moving licences into a new system, or should we treat all abstractors in the same way regardless of water availability?

We consider that transitioning licences and abstraction entitlements into the new system is important and appreciate the inherent difficulty in this. New entitlements should reflect actual patterns and levels of water use by abstractors in a given catchment, taking account of their differing profiles of demand, month by month, and according to the type of year².

As the consultation document recognises, a more complex reform process would entail a greater degree of regulatory activity which comes at a cost. It is appropriate that the regulatory burden and costs are focused upon areas where they deliver real benefits. We are pleased to see this recognised in the consultation document, along with the possibility raised of hybrid options depending on the water availability and geography within specific catchments.

When the rules are being designed the regulator should be sensitive to specific issues within individual catchments. Conditions in catchments will vary, as will the demands of abstractors. Public water supplies are essential for public health, society and the economy, just as agriculture is important to food production, and we would like to see this recognised in the reformed system. Although public water suppliers have programmes to reduce demand, this does not tend to positively correlate with water availability unless drought plans are in effect and drought measures are employed to specifically reduce demand for water.

Thus we prefer that the risks in each catchment should be assessed rather than treating all abstractors in the same way.

2. i.e. wet, normal, dry or drought year.

17) What would be the most effective method to calculate the new annual limits to be transferred into the new system (for example average annual, average peak or a combination of actual and licensed volumes)? And what assessment period should be used to calculate them?

The reliance on average or peak values to calculate new annual limits could lead to problems. Each abstraction site needs to be considered on its own merits to be able to calculate an appropriate abstraction limit.

The water abstracted by any abstractor in any given year in the past depends in part upon how much was there to be taken (between (a) the upper hydrological control, which reflects whether it is a wet, normal, dry or drought year, and (b) the lower ecological control, if one is present). So the highest or the average abstraction volume in for example the last six years is not necessarily equal to an abstractor's peak or average demand, because it is partly an artefact of the weather experienced.

Each abstractor's unconstrained demand also varies according to the kind of year experienced and differs from one abstractor to another. We agree that historic data should be used to inform the entitlements to be transitioned over to different abstractors, rather than future abstractions. However, taking averages or peaks from a short term record may lead to unreliable estimates of abstractors needs and using long term records suffers from the changes that occur over time (non-stationarities).

In light of these difficulties, CIWEM believes that the needs of abstractors need to be assessed in light of:

- Abstractors' individual profiles of demand in wet, normal, dry and drought years.
- Abstractors' profiles of demand over the course of a year (week by week).
Failing to recognise non-coincidences in the intra-annual demand profiles of different abstractors could lead to optimisation benefits being missed.
- Any special conditions on individual abstractors.
For water companies, the statutory duty to supply needs to be taken into account, and the deployable output they need to be able to rely upon in the design dry year condition that underpins their planning processes needs to be protected.

18) Do you support the establishment of a water reserve to support economic growth?

CIWEM does not support the establishment of a water reserve. A reserve would reduce the resilience of existing abstractors. A catchment with a reserve is effectively the same as a catchment with water available and so should be treated as a 'basic' rather than 'enhanced' catchment.

We can see that the option of using unused water to create a reserve is attractive, but this is superficial. Data cited in the consultation document indicate that much of the water licensed for use is not taken; but the reasons for why, where and when any unused water is actually available for abstraction need to be considered. Two key issues arise:

- Firstly, some of the now unused water is over-licensed water. Taking it would bring environmental damage. CIWEM strongly rejects the use of any over-abstracted or over-licensed water to create a water reserve. We are pleased to note this problem is recognised in the consultation document.
- Secondly, the 'unused water' is not always there to be taken, particularly when it is dry and water is under greatest demand. The data cited in the Impact Assessment that

accompanies the consultation document show that only 45% of licensed supplies were taken in the year in question (2011/12), with public water supplies drawing 60% of licensed quantities, and agriculture (excluding spray irrigation) taking just 27% of licensed rights. Here, the issue is one of water being hydrologically limited, not unused. The licensed resources were not taken because they were not there to be taken.

CIWEM takes the view that under-deployed, environmentally-benign resources are likely to be available when they are in least demand and not available when they are most needed. The potential that does exist for any unused resources to support a water reserve seems to be limited to what has been called 'low reliability' resources, those that are there in times of plenty, but not in dry years.