



Department  
for Environment  
Food & Rural Affairs

[www.gov.uk/defra](http://www.gov.uk/defra)

# **UK Government response to consultation on reforming the Water Abstraction Management System**

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# Executive Summary

We want every business in England from a small family farm to a large paper company to have access to the water resources they need to run their businesses and grow in a way that protects the environment.

The UK Government wants to reform how water abstraction (the process of taking water directly from surface water, such as rivers, or ground water) is regulated in England to create a better, fairer and more modern approach that will reduce water waste, cut red tape and help businesses to focus on investment and growth. We also want a system that is embedded in local catchment decision-making and is driven by the value of our crucial natural asset, water.

The current system (set up in the 1960s) is not flexible or modern enough to respond to pressures on the environment, farming and other business requirements, and the needs of our public water supply, given a growing population and climate change. We need fairer, more catchment driven and more efficient systems that support investment over the long-term to ensure resilience while protecting the value of our natural capital.

We want to reform how water abstraction is regulated, revealing the value of water, to help businesses to respond better to short term low flows as well as enable a focus on long term investment and growth. We want to ensure all abstractors can access the water they need for their businesses and that there is enough water left in our rivers and groundwater to maintain habitats and water quality.

Following commitments in the Water White Paper (2011), the UK and Welsh Governments issued a joint consultation called “[Making the Most of Every Drop](#)” in 2013 on our proposals for abstraction reform. We received a wide range of views and broad support for our proposals. Since then we have published a [summary of consultation responses](#) in July 2014 and continued working with interested parties to develop our proposals. This document is our response to the consultation and sets out the approach to reform in England.

## Broad proposals

This document sets out our proposed plans for reforming the abstraction management system in England, taking into account the input received from a range of interested parties. It sets out how we will achieve these aims in a way that balances the needs of different business users and the environment.

In summary, the new abstraction management system will mean:

- From the early 2020s replacement abstraction permits will be issued with permitted volumes that at least reflect current business use and have a similar reliability to

current licences. Abstractors' past peak water usage over at least 10 years will be considered including dry years. 'Paper water' (licensed abstraction volumes that have not been used) will be removed, subject to appeal, if they pose a risk to the environment. Hands-off flows and similar conditions will be standardised to simplify the system.

- At any time when flows are high, abstractors will be allowed to take water to store it. There will be no seasonal permits. The new permits will allow abstractors to take water at any time when flows are high meaning they can store it for when flows are low and make better use of reservoirs.
- All abstractors directly affecting surface water will have conditions on their permits that enable flow based controls to protect the environment. Those currently without flow-based controls will have new conditions on their permits. These new conditions will enable a gradual approach to implementing controls to protect the environment at low flows tailored to local conditions. This approach will be fair, evidence based and proportionate taking into account the needs of essential users and improve our ability to manage our natural water asset.
- Abstractors will be able to trade water in a quicker and easier way in catchments where there are potential benefits. In these catchments, there will be a range of pre-approved trades, which means permit holders can trade more easily at times when the availability of water is low. In these catchments, surface water abstractors will be given shares of the catchment's different water resources which will facilitate pre-approval of upstream trades. This will give abstractors more flexibility, helping them to cope during low flows and reveal the value of water to underpin decision-making. We, with Ofwat, will work with interested parties to consider whether there are any mechanisms (e.g. trading codes of practice) required to address concerns from smaller abstractors such as farmers around market dominance by larger abstractors. We will also keep the impacts of markets under review to guard against unintended consequences such as impacts on food security.
- No permits will be time limited, providing a fairer approach. We will take a risk-based catchment approach to permit reviews and will consider all permits on a level playing field. We will publish catchment data and information so abstractors and others can understand the environmental risks in their catchment and the likelihood of a review being triggered. Catchment abstraction reviews will link to the overall management of catchments as a key natural asset working closely with local people. There will be reasonable notice given of potential permit changes to give abstractors time to adapt. There will be no compensation for permit changes.

The UK and Welsh Governments share a joint vision for the future of the abstraction management system. We have been working closely with the Welsh Government in

developing the proposed reforms and they will publish a separate [response document](#)<sup>1</sup> setting out their proposals for handling the reforms in Wales.

## **Achieving a sustainable and resilient water sector**

Reforming the abstraction management system is part of a wider approach to ensuring that the water sector is resilient for the long term. Climate change and population growth will place increased pressure on our water resources and we need to ensure that we put systems in place now that will allow us to manage our water resources in a sustainable way for the future.

Managing the way we abstract water is an important first part of the process and it sits in a wider context of developing a resilient water sector. We are currently working with a range of water using sectors to develop a roadmap that details the actions and decisions the UK Government will need to take over the next five years to maintain long-term resilience.

As well as looking to the future, we must continue to tackle abstraction that is causing damage to our rivers and groundwater now.

Firstly, the Environment Agency (EA) has intensified its work and is taking action to address both the legacy of historical unsustainable abstraction licences, and avoid permitting new abstractions that may create a risk. The EA has committed to a programme of measures which includes completing the Restoring Sustainable Abstraction programme by 2020 as well as further action beyond the implementation of a reformed abstraction management system. Since 2008, 200 licences in England have been changed and around 250 licences are still being investigated. This action has returned just over 27 billion litres of water per year to the environment - this is enough water to supply half a million people, or a city the size of Liverpool, with water for one year.

Secondly, we want to bring currently exempt abstractions (e.g. trickle irrigators) under licensing control to create a level playing field for all abstractors, and enable future management of natural water assets in catchments to be made using a complete picture of water use. Ending exemptions is a key stage on the path to abstraction reform as it creates a level playing field for the reformed system, while taking account of the needs of the environment. In parallel with this document, we are [consulting on proposals](#)<sup>2</sup> to bring most exempt abstractors into the water licensing regime (known as New Authorisations) using a light-touch, risk-based approach.

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<sup>1</sup> <http://gov.wales/consultations/environmentandcountryside/making-the-most-of-every-drop/?skip=1&lang=en>

<sup>2</sup> <https://consult.defra.gov.uk/water/water-abstraction-licensing-exemptions>

# 1. Introduction

This document sets out the UK Government response to extensive consultation with interested parties on reforming the abstraction management system. It sets out the approach to reform in England.

## 1.1. Why reform?

The current abstraction licensing system was set up in the 1960s and is not flexible enough to respond to pressures on the environment, business requirements and the needs of our public water supply, given a growing population and climate change. The system does not meet the needs of abstractors; for example there is a two tier system with unfair risks on those with time-limited licences, and trades take too long to allow flexible trading of available water. Neither does it meet the needs of the environment; protection is time-consuming and costly with 6% of recently assessed water bodies still failing to meet environmental standards due to over-abstraction.

We want to reform how water abstraction (the process of taking water directly from water sources, such as rivers, or groundwater) is regulated in England to create a better, fairer and more modern approach that will reduce waterwaste, cut red tape and help businesses to focus on investment and growth.

The Coalition Government committed to reform of the water abstraction management system in England in the Natural Environment White Paper, published 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 UK and Welsh Governments published a joint consultation, "[Making the Most of Every Drop](#)", in December 2013. The purpose of the consultation was to seek views on a range of proposals for reforming the water abstraction management system in England and in Wales. A [summary of consultation responses](#) was published in July 2014.

During the consultation a wide range of responses was received from businesses, NGOs and other interested parties and there was broad support for reform. Since then there has been continued engagement with interested parties on the issues they raised.

## 1.2. The aims of reform

The UK Government wants to introduce a reformed water abstraction management system that is able to promote resilient economic growth while protecting the environment. The aims of our reforms are to create an abstraction management system that:

- Allows more flexible and fairer responses to short term changes in flows;

- provides adequate certainty for long-term investment and growth whilst also protecting the environment; and
- is able to respond to future pressures such as climate change and population growth.

We want to do this in a way that minimises administrative costs whilst still achieving our aims. This is about smarter regulation that reduces the cost to businesses of dealing with the challenges of the future. It is also about supporting better catchment management. We want to make sure we move to a new system in a way that takes into account the water that abstractors need for their businesses.

We also have a range of measures in place to ensure we continue to tackle current unsustainable abstraction in advance of abstraction reform. More information on the approach to addressing unsustainable abstraction is set out in Annex 1.

### **1.3. Impact assessment**

The policy position in this document has been informed by an impact assessment which can be viewed [on gov.uk](#)<sup>3</sup>. The headline results are included in section 2.3.

### **1.4. Working with interested parties**

We have worked closely with a range of interested parties in developing our evidence base, both for the proposals that went into the consultation and the development of those proposals into our current position set out in this response. Our Abstraction Reform Advisory Group, which includes representatives of our key interested parties, has made a valuable contribution to the policy development process.

We also explored with abstractors how problems with future water availability might affect them, how they might adapt and the potential impact our proposals might have on their businesses. As a key part of developing our evidence base, interested parties in our case study river catchments helped us to understand how abstractors might respond in catchments with different characteristics. All this information was used to help develop our models and quantify the impacts of any changes.

As part of the consultation process we held a number of workshops early in 2014 to talk to interested parties about the proposed changes, and used other methods such as Twitter and Digital Dialogues to reach even more interested parties. We have continued to engage with interested parties on a range of issues since. This document identifies how discussions with interested parties have influenced our thinking and policy development in the relevant sections below.

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<sup>3</sup> [www.gov.uk/government/consultations/reforming-the-water-abstraction-management-system-making-the-most-of-every-drop](http://www.gov.uk/government/consultations/reforming-the-water-abstraction-management-system-making-the-most-of-every-drop)



## 1.5. This document

This document sets out the high level proposals for a new abstraction management system in England. The rest of the document is split into the following sections:

- [Section 2](#) - our proposed headline approach to reform
- [Section 3](#) – how we improve flexibility to respond to short-term water availability issues;
- [Section 4](#) – how we improve long term sustainable management supporting growth and investment;
- [Section 5](#) - how we intend to move to the new abstraction system;
- [Section 6](#) - summary of the proposed approach; and
- [Section 7](#) - what happens next for abstraction reform.

## 1.6. Abstraction reform in Wales

The UK and Welsh Governments share a joint vision for the future of the abstraction management system. We have been working closely with the Welsh Government in developing the proposed reforms and they will publish a [separate consultation response](#)<sup>4</sup> setting out their proposals for handling the reforms in Wales. This document applies to the abstraction system in England.

## 1.7. The broader approach to resilience

Reforming the abstraction management system is one part of a wider approach to ensuring that the water sector is resilient for the long term. Climate change and population growth will place increased pressure on our water resources and we need to ensure that we put systems in place now that will allow us to manage our water resources in a sustainable way for the future.

Managing the way we abstract water is an important first part of the process and it sits in a wider context of developing a resilient water sector. We are currently working with a range of water using sectors to develop a roadmap that details the actions and decisions the UK Government will need to take over the next five years to maintain long-term resilience.

## 1.8. Addressing current unsustainable abstraction

As well as looking to the future, we must continue to tackle the problem of abstraction that is causing damage to the environment now.

First, the Environment Agency (EA) has intensified the action it is taking now to address both the legacy of historical unsustainable abstraction licences, and avoid permitting new

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<sup>4</sup> <http://gov.wales/consultations/environmentandcountryside/making-the-most-of-every-drop/?skip=1&lang=en>

abstractions that may create a risk. The EA is working with interested parties to take action where it is necessary to protect local sites, support healthy ecology and ensure healthy groundwater where current abstraction poses a significant risk. For example, they have taken action to protect and improve Natura 2000 and SSSI sites by the end of this year, have committed to completing the Restoring Sustainable Abstraction programme by 2020 and aim to revoke licences that have been unused for more than four years by 2021.

Just over 27 million cubic metres of water per year have already been returned to the environment, including 9.4 million cubic metres per year of water back to support chalk streams, securing fish and eel passes and restoring the river level of approximately 1,000 km of rivers.

Secondly, we want to bring currently exempt abstractions under licensing control to create a level playing field for all abstractors, and enable management of natural water assets in catchments to be made using a complete picture of water use. Ending exemptions is a key stage on the path to abstraction reform as it creates a level playing field for the reformed system by applying the same controls to everyone. Currently, some exempt abstractions may cause environmental damage, but are able to go on unchecked because they are not subject to controls. This means that licensed abstractors bear the burden of control to manage water resources and protect the environment.

In parallel with the publication of this document on abstraction reform, we are consulting on proposals to bring most exempt abstractors into the water licensing regime (known as New Authorisations) using a light-touch, risk-based approach<sup>5</sup>. We expect that licences will be issued on the basis of recent actual use, and curtailed or refused only where there is a risk of serious damage to the environment. In this way we will act, as we do for licence holders, to ensure the environment is protected.

Bringing New Authorisations under licensing control will also enable us to meet the EU Water Framework Directive, which requires us to have controls over abstractions, other than those that have no significant impact on water status.

Further information can be found in [Annex 1, delivering a healthy environment through managing abstraction and flows](#).

## 1.9. Further information

Alongside this document we have published some additional information to help people understand the proposals. The '[What would reform mean for abstractors?](#)<sup>6</sup>' document is intended to help current licence holders understand exactly what the proposals mean for their licences.

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<sup>5</sup> The New Authorisations consultation: <https://consult.defra.gov.uk/water/water-abstraction-licensing-exemptions>

<sup>6</sup> <https://www.gov.uk/government/consultations/reforming-the-water-abstraction-management-system-making-the-most-of-every-drop>

During the consultation further information was requested on the impact of reform on groundwater abstractions and environmental protection. [Annex 2](#) and [annex 3](#) discuss these issues in more detail.

## 2. A reformed abstraction management system – headline approach

### 2.1. Background

In the “*Making the most of every drop*” consultation, we identified two main options for reform, which we developed by working closely with interested parties. We called these ‘Current System Plus’ and ‘Water Shares’. As with the current system, these proposals would apply to abstractions greater than 20 cubic metres per day.

The two options shared many features such as aiming to maximise the amount of water that could be abstracted and making it quicker and easier for abstractors to trade water with each other.

The key difference between the Current System Plus and Water Shares options was that under the Water Shares proposal, abstractors would receive a share in the total water available and varying short-term allocations based on these shares, rather than a fixed volume of water.

For both options, we proposed that in a majority of catchments the system of abstraction management would remain in many ways as it is now. In catchments where less water is available, known as ‘enhanced catchments’, and therefore where the Environment Agency must impose more restrictions, we proposed providing a wider set of tools for managing abstractions. In particular, we proposed making it easier to pre-approve trades so that abstractors within the catchment could make best use of the available water between themselves. Water Shares allowed for short term allocations which enables a greater range of trades to be pre-approved than in Current System Plus.

### 2.2. Key features of the proposed approach

Using the feedback from the consultation, we have developed a proposed approach which combines the best elements of the consultation options. Our proposals for reform are set out in more detail in sections 3 and 4, and section 5 explains how we will move to the new system in detail (transition). In summary, the new abstraction system will mean:

- **From the early 2020s replacement abstraction permits will be issued with permitted volumes that at least reflect current business use and have a similar reliability to current licences.** Abstractors’ past peak water usage over at least 10 years will be considered including dry years. ‘Paper water’ (licensed abstraction volumes that have not been used) will be removed, subject to appeal, if they pose a risk to the environment. Hands-off flows and similar conditions will be standardised to simplify the system.

- **At any time when flows are high, abstractors will be allowed to take water to store it.** There will be no seasonal permits. The new permits will allow abstractors to take water at any time when flows are high meaning they can store it for when flows are low and make better use of reservoirs.
- **All abstractors directly affecting surface water will have conditions on their permits that enable flow based controls to protect the environment.** Those currently without flow-based controls will have new conditions on their permits. These new conditions will enable a gradual approach to implementing controls to protect the environment at low flows tailored to local conditions. This approach will be fair, evidence based and proportionate taking into account the needs of essential users and improve our ability to manage our natural water asset.
- **Abstractors will be able to trade water in a quicker and easier way in catchments where there are potential benefits.** In these catchments, there will be a range of pre-approved trades, which means permit holders can trade more easily at times when the availability of water is low. In these catchments, surface water abstractors will be given shares of the catchment's different water resources which will facilitate pre-approval of upstream trades. This will give abstractors more flexibility, helping them to cope during low flows and reveal the value of water to underpin decision-making. We, with Ofwat, will work with interested parties to consider whether there are any mechanisms (e.g. trading codes of practice) required to address concerns from smaller abstractors such as farmers around market dominance by larger abstractors. We will also keep the impacts of markets under review to guard against unintended consequences such as impacts on food security.
- **No permits will be time limited, providing a fairer approach.** We will take a risk-based catchment approach to permit reviews and will consider all permits on a level playing field. We will publish catchment data and information so abstractors and others can understand the environmental risks in their catchment and the likelihood of a review being triggered. Catchment abstraction reviews will link to the overall management of catchments as a key natural asset working closely with local people. There will be reasonable notice given of potential permit changes to give abstractors time to adapt. There will be no compensation for permit changes.

These reforms to the abstraction management system will create a better, fairer and more modern approach that will reduce water waste, cut red tape and help businesses to focus on investment and growth.

We will designate 'enhanced catchments' in areas where water is more scarce and there are benefits from trading. In these catchments we will provide a wider range of tools to manage abstraction where it is most needed. Over time the pressures on our water resources may change as the climate changes and the population grows. This may justify further catchments being designated as enhanced. There will also be scope to develop

the system to meet changing environmental standards or other legislation if required. In these ways, the system will be able to evolve and adapt to meet future challenges.

### **2.3. Arriving at the proposed approach**

We considered both the evidence from the impact assessment and the responses from the consultation and further interested party engagement when arriving at the proposed approach. The proposed approach is a blend of the best elements of both the Current System Plus and Water Shares approaches. In enhanced catchments it introduces the accounting framework of the Water Shares option while largely maintaining the annual and daily limits and hands-off flows of the Current System Plus option.

In summary we have chosen our proposed approach because by introducing the shares accounting framework, it creates a more adaptive and flexible framework to respond to future pressures while allowing greater trading flexibility including facilitating pre-approval of upstream trading. It also emphasises the shared nature of this limited natural capital, encouraging water efficiency and collaborative catchment management. However, by largely maintaining annual and daily limits and hands-off flows as in Current System Plus, it minimises regulatory change and costs reducing implementation risks.

Evidence from the final impact assessment of the consultation options showed that there were significant benefits in all reform scenario combinations compared to the current system. However, it was difficult to differentiate between the benefits of the reform options due to the limitations of the evidence base.

The net economic benefits, in England & Wales, range from about £100m up to about £650m net present value (NPV) over 25 years. The benefits tend to be higher under climate change scenarios with very dry periods as the reform options provide significantly increased resilience in these situations. Further details are available in [the final impact assessment](#).

The consultation responses revealed that interested parties preferred different elements from each of the options we consulted on. We developed our proposed approach to combine the better elements of the consultation options while taking account of interested parties' comments. We also refined many of the proposals in determining the final proposed approach particularly in the approach to moving to the new system.

### 3. Improving flexibility to respond to short-term water availability issues

This chapter sets out how the proposed reforms to the abstraction management system will enable abstractors to be more flexible in responding to short term water supply issues. It covers our proposals to:

- remove seasonality from licences;
- allow abstractors to take additional water and store it at high flows in enhanced catchments;
- convert current on-off flow based controls in enhanced catchments to controls that switch on and off more gradually;
- link controls on abstraction to low flows and remove specific restrictions on spray irrigators; and
- enable quicker and easier trading in enhanced catchments.

Each section shows the options given in the consultation, gives more detail on our current policy position, taking into account the formal responses to the consultation as well as further informal consultation and engagement with interested parties, and summarises our proposals.

#### 3.1. Removing seasonality from licences

##### **What we proposed in the Consultation:**

- To replace seasonal conditions on licences with availability-based conditions. This will ensure water can be used when available at any time of year.

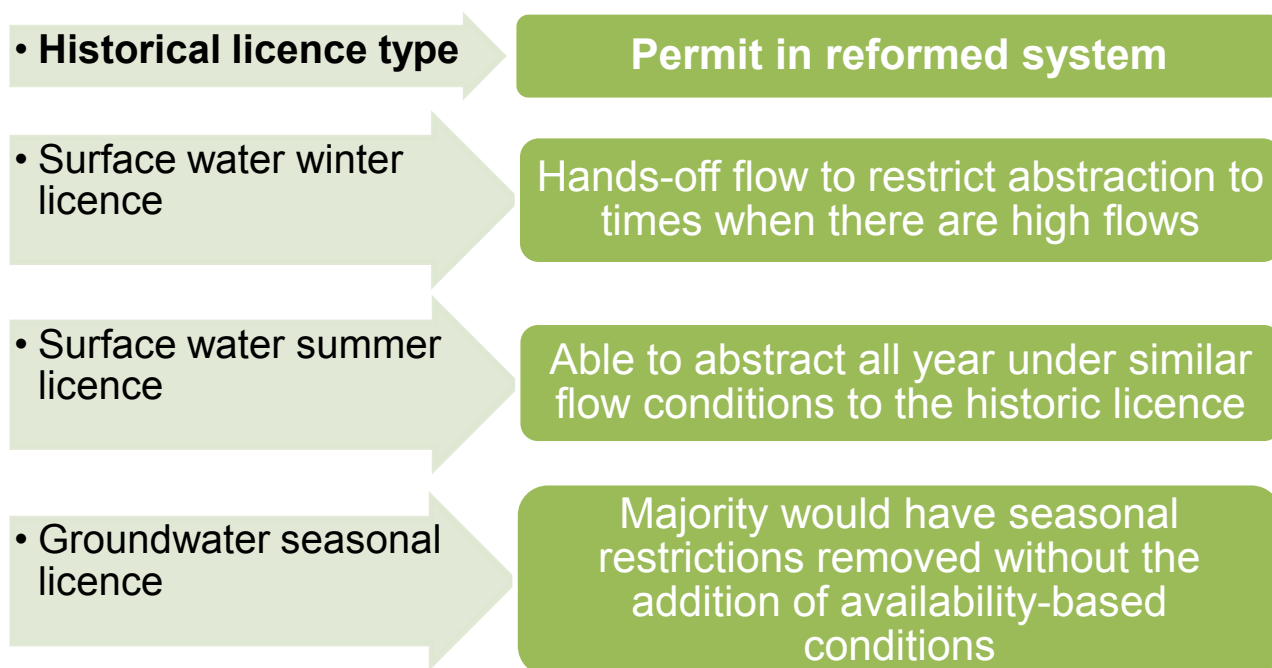
All abstraction permits issued under the new system will be issued with both annual and daily abstraction limits for each abstractor. As part of our aim for an equitable system that links abstraction volumes to water availability, there will be no seasonal licences<sup>7</sup>. This will remove the two-tiered approach in place currently for spray irrigation abstractors. This proposal received a high degree of support in the consultation and we have therefore not changed it.

Despite the broad support, some abstractors were concerned about how their seasonal volumes would be allocated across the year. Under the reform proposals, abstractors who were previously able to take their annual volume in only part of the year would be able to take their annual volume at any time during a 12 month period, subject to complying with other conditions such as hands-off flows and daily limits. This means abstractors will be able to take water whenever flows are high enough, regardless of the season. Further

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<sup>7</sup> There may be some very limited circumstances with groundwater licences where lack of data on levels may mean seasonal restrictions are still required.

examples of how historical seasonal licences will be treated under the new system are shown in Figure 1.



**Figure 1** How changes in conditions will impact abstractors with historical seasonal licences<sup>8</sup>

Some respondents were concerned that allowing abstraction at any time of the year could damage environmentally sensitive sites, particularly at times of low flow, or increase the risk of reducing the water available for existing abstractors. We believe these risks can be managed by availability-based conditions rather than season-based conditions. For example, abstractors who previously had winter abstractions would not be able to abstract at low flows in summer because they would have hands-off flow conditions that would prevent them from doing so. They would, however, be able to abstract at higher flows whenever they occur.

**Summary of proposals:**

- Replacement of seasonal conditions on licences with flow based conditions where appropriate. This will ensure water can be used when available at any time of year.

<sup>8</sup> Note, some groundwater abstractions are very closely linked to surface water receptors and need additional hands-off flows



## 3.2. Taking and storing additional water at high flows in enhanced catchments

### What we proposed in the consultation:

- Allow additional abstraction at very high flows that is not counted towards permitted volumes in enhanced catchments

We want abstractors to be able to take water and store it at times when there are high flows. This is part of making the system more responsive to real time water availability and encouraging storage of water at high flows. Our proposed approach is that the Environment Agency will allow additional abstraction ('bonus water') at high flows meaning that abstractors are able to take the water when it's available and store it if they wish. In these scenarios, the Environment Agency would alert abstractors that flows are above a set threshold. Abstractions at this time would not count towards annual permitted volumes. We intend to implement this in enhanced catchments only, as one of the additional tools to help improve management of resources in water-scarce catchments (see more detail on enhanced catchments in section 3.3). Smart meters will also be required to implement these controls which we will only require in enhanced catchments.

During the consultation there was support for this proposal, although some respondents noted that at some times of year it will be important to maintain high flows for environmental and habitat needs. Several respondents questioned how 'very high flows' would be calculated. Both of these would be addressed in the catchment management rules (see section 4.1) on a catchment by catchment basis.

### Summary of proposals:

- Allow additional abstraction at very high flows that is not counted towards permitted volumes in enhanced catchments.

### 3.3. Converting current on-off flow based controls in enhanced catchments to controls that switch on and off more gradually

#### **What we proposed in the consultation:**

- To link abstraction more closely to the amount of water available.

#### Current System Plus (surface water):

- Refine hands-off flow conditions so limitations on daily abstraction would decrease gradually rather than stopping immediately;

#### Water Shares (surface water):

- Each abstractor is given a fixed share in an available water source (proportional to their existing licence or based on their current licensed volume) that provides short-term variable allocations depending on water availability;
- Some shares are highly reliable giving almost constant access to water;
- Other shares give low reliability and only access to water when flows are high.

Under both options, groundwater allocations would be linked to long term groundwater availability.

Our aim is to provide a more graduated link between the volume of abstraction and the flow levels in a catchment. This will give abstractors more flexibility to adapt to lower flows and encourage them to use water more efficiently.

Based on the views expressed by interested parties and further technical development, we have sought to build upon the best elements of both consultation options and respond to the issues raised by interested parties. In particular, whilst many interested parties were supportive of quicker easier trading, interested parties raised concerns about the complexity and feasibility of varying short-term allocations in the water shares option. As a result, our proposed approach is a combination of the components that made up the options we consulted on.

#### **Surface water abstractors**

In non-enhanced catchments abstractors will see limited change to linkages between water allocation and availability. All abstractors will have annual and daily permitted volumes, with hands-off flows if they had them previously, similar to current licensing.

The Environment Agency will rationalise hands-off flows requirements in all catchments to make the system more straightforward (see section 5.3 for further detail). This means abstractors may experience some changes but their access to water under the new system should broadly be as reliable as it is on their existing licence. More detail on controls to be introduced at low flows is included in section 3.4.

## Surface water abstractions in enhanced catchments

In some catchments where water is more scarce, we expect that it will be more difficult to balance the needs of abstractors and the need to protect the environment. In these catchments – known as ‘enhanced catchments’ - the Environment Agency will be able to manage abstraction more closely through a range of tools set out in these proposals.

Firstly, in enhanced catchments we will take forward elements of the accounting framework from the Water Shares approach but not the short-term variable allocations. In these catchments, abstractors will still have annual and daily limits but these will be linked to proportions (‘shares’) of water available for abstraction in different parts of that catchment. In effect, this accounts for where an abstractor’s water comes from in the catchment. The annual and daily limits will not change unless required following a review (see section 4.2). The use of the shares accounting framework in these catchments supports upstream trading – there is more information on this in section 3.5. It does not affect day to day access to water.

Secondly, we will refine existing hands-off flow conditions in enhanced catchments so that limitations on abstraction would increase gradually. This differs from current hands-off flow controls that are generally either off or on, which makes adaptation difficult and does not encourage water efficiency.

In these catchments abstractors will generally need smart meters to allow closer monitoring of water availability and use.

In addition, once the new system is implemented, we will pilot other ways to make use of the water shares accounting framework, introducing variable shorter allocation periods, in a very small number of catchments (see section 3.5). The result of these pilots would determine whether changes of this type might be introduced more widely.

## Groundwater abstractions

In general, groundwater resources respond to changes in weather less quickly than surface water resources. This means that the proposed reform approach, linking water allocation to availability, is less relevant for groundwater.

Groundwater abstractions will continue to be managed with annual allocations which would only change in the long term in response to a risk to the environment (see section 4.2 on reviews). We have also set out our thinking on groundwater in more depth in [Annex 2](#). This includes:

- ensuring that, where beneficial to the environment and abstractors, groundwater abstraction policies are more tailored to local hydrogeological settings;
- promoting groundwater abstraction trading where it moves pressure away from sensitive areas, for example, wetlands and river valleys or coastal areas with saline intrusion risk; and

- promoting the use of groundwater augmentation schemes that deliver benefits to abstractors and the environment.

There are approximately 200 groundwater abstractions (less than 2% of total) in England and Wales that are constrained by either a river hands-off flow condition or a groundwater hands-off level (HoL) condition. Under the proposed approach, most existing licences that have these conditions currently would retain them in the new system.

#### **Summary of proposals:**

- Abstractors will receive an annual permitted volume with similar reliability to now.
- In enhanced catchments, these annual permitted volumes will be accounted for as proportions or 'shares' of the water available in different parts of the catchment and any hands-off flows will be gradually switched on and off.

### **3.4. Link controls on abstraction to low flows and remove specific restrictions on spray irrigators**

#### **What we proposed in the consultation**

- Introduce a regulatory minimum level at which all abstraction must stop.

Our aim is to introduce a system which is fair, proportionate and evidence based. This approach extends to controls on abstraction during low flows when we believe that all abstractors directly impacting on surface water should potentially contribute to environmental protection. As in the current system, abstractors with flow-related conditions will have to stop or reduce abstraction if water flows locally fall below a certain threshold (hands-off flow conditions). Where surface water abstractors do not currently have hands-off flows, new conditions that enable low flow controls will be introduced. This will spread the responsibility for environmental protection between all abstractors and create a more level playing field. When conditions are being applied, low flow controls in all catchments will begin with encouragement of voluntary reductions with the option to scale up to mandatory restrictions if there remain risks to the environment.

The approach to applying low flow conditions will be determined at a catchment level to ensure they are appropriate to the condition of that catchment and take into account costs and benefits but will involve the same key elements set out in Figure 2.



**Figure 2 Process for developing and applying low flow controls**

We believe that this approach to applying controls at low flows will ensure a proportionate, evidence-based approach to protecting the environment while minimising impacts on abstractors. This will improve our ability to manage drought and will also allow us to stop unfairly singling out spray irrigators for restrictions at times of drought.

This proposed approach takes into account input from interested parties on our proposal for a regulatory minimum level below which all abstraction would stop. During the consultation there was majority support for this proposal, along with suggestions for how it should work. Following the consultation we used a digital dialogue in September and October 2014 to explore views on low flow controls and drought management. There were a wide range of views. Some thought restrictions at low flows should apply to all equally while others thought that some uses should be prioritised. This has resulted in the

proposed approach of new controls at low flows which combines equal, but catchment-tailored, approaches to restrictions with prioritisation for essential water needs<sup>9</sup>.

#### **Summary of proposals:**

- All abstractors affecting surface water will have conditions on their permits that enable flow based controls to protect the environment. Those currently without flow-based controls will have new conditions on their permits. These new conditions will enable a gradual approach to implementing controls to protect the environment at low flows tailored to local conditions. This approach will be fair, evidence based and proportionate taking into account the needs of essential users.
- Irrigators will no longer be unfairly singled out for low flow control.

### **3.5. Quicker and easier trading in enhanced catchments**

#### **What we proposed in the consultation**

- Trading would be quicker and easier in enhanced catchments and only possible between those with a direct interest in water abstraction.
- Under both options some trades would be pre-approved although Water Shares would allow pre-approval of shorter-term and a greater range of trades including shorter-term trades.

Trading could be an important tool for abstractors to manage their response to short term water availability. Making trading quicker and easier in enhanced catchments was broadly welcomed by consultation respondents. In other catchments, trading will continue on the same basis it is now, with each application being individually assessed although the Environment Agency will look for any opportunities to simplify the process under the new permit system.

#### **Enhanced catchments**

Where water is scarce and trading is likely to provide clear benefits above the costs of setting up the trading systems, abstractors will be able to trade water in a quicker and easier way through pre-approved trading rules. The Environment Agency will also be able to more easily pre-approve upstream trading due to the implementation of the accounting framework of the Water Shares option. This will give abstractors more flexibility to trade their access to water with other abstractors and therefore better manage periods of

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<sup>9</sup> Essential water needs' will include water needs for households and to provide reliable household electricity supplies but will be developed through further consultation

restricted water availability. Trading will help reveal the value of water supporting better management of this important natural capital. Abstractors will not be required to trade and permitted volumes will still be issued on an annual basis with daily limits as appropriate, as opposed to the short term allocations originally proposed under the Water Shares option. This approach is a combination of the options proposed in the consultation in response to support for quicker trading and concerns from interested parties about the impact of the proposal for short-term water allocations.

The Environment Agency will publish the pre-approval rules, probably via an online map, so each abstractor can see easily who they are able to trade with and how much they can trade in what conditions (e.g. hands-off flows). Abstractors will also be able to indicate their interest in trading. We will encourage brokers to provide fast and efficient trading systems. The Environment Agency will not be involved in brokering trades but trades will have to comply with the rules and be reported to them.

Some respondents questioned why a greater range of upstream trades was only possible under the Water Shares option. A key reason for this was that the annual amount of water each abstractor is permitted to take is accounted for as a proportion ('share') of the total amount of water available for abstraction in different parts of catchments. An abstractor towards the bottom of a catchment could hold shares in water resources towards the top of a catchment. They could then be able to trade with an abstractor who wants to operate in that part of the catchment because they both have shares in the same part of the catchment. So effectively the water shares accounting framework links individual abstractors' permitted volumes to where the water comes from upstream in the catchment which then allows the water to be traded with those upstream.

It should be noted that the annual permitted volume of water each abstractor has will not be varied by the Environment Agency from year to year unless the risk-based reviews process reveals it is necessary to make changes. Where this is the case abstractors will be given reasonable notice before a change takes place (see section 4.2).

Once the new system is implemented, we will work with abstractors in a small number of catchments to pilot ways to further utilise the potential of the water shares accounting framework, for example by using shorter allocation periods to deliver increased potential to pre-approve trades. The result of these pilots would determine whether systems of this type might be introduced more widely.

## **Market development and regulation**

Further concerns were raised during the consultation on whether we need to regulate to avoid unintended consequences of markets and market distortions. To address this, we have worked closely with Ofwat and the Competition and Markets Authority as well as holding a workshop of market experts and interested parties. This involved a systematic identification and assessment of risks and potential mitigating actions detailed in the

impact assessment. We have also conducted extensive modelling of markets for [the impact assessment](#).

As was widely supported in the consultation responses, we propose that only those with an interest in water, either those with a justified need to abstract water or those owning land on which there is a justified need to abstract water, will be able to hold shares or allocations. The need for water will be determined at the point of application for a permit to abstract. This is to avoid possible unintended consequences of non-abstractors trading, which consultation respondents were concerned about.

There are many different types and sizes of abstractors and some consultation respondents were concerned that large abstractors such as water companies would dominate and distort the market. Due to the very scale of difference between small businesses and water companies in terms of their demand for water, we anticipate that this risk could be small. However, we, with Ofwat, will work with interested parties to examine how any remaining concerns could be addressed which are not adequately covered by competition law. This will include considering whether codes of trading practice could be practical, effective and enforceable for abstraction markets post reform.

There were also concerns that a major transfer of sectoral water access from irrigators could occur due to the development of markets affecting food security. Evidence from the [impact assessment](#) suggests this is unlikely as most forecast trading was short-term between irrigators due to their varying water requirements and resilience which other sectors don't tend to have. We also believe that there are benefits from inter-sectoral trading to support water resilience. So for instance Anglian Water and Kent County Council are both examining how irrigators and water companies can collaborate to improve the resilience of water supplies to irrigators. Once markets begin to develop, we will closely monitor their impacts to ensure there are no unintended consequences for instance on food security. It will be possible to further develop market regulation and revise pre-approval trading rules if necessary.

#### **Summary of proposals:**

- Trading will continue to be available in all catchments as currently

#### Enhanced catchments

- Abstractors in enhanced catchments will be able to trade water in a quicker and easier way through pre-approved trades, including upstream trades, only possible between those with a direct interest in water abstraction. This will help reveal the value of water supporting better management of this important natural capital.



## 4. Improving long term sustainable management supporting growth and investment

This chapter sets out how the proposed reforms to the abstraction management system will support investment and growth over the long-term to ensure resilience, while protecting the environment. It covers our proposals to:

- introduce management rules for each catchment;
- introduce risk-based reviews and remove time limited licences;
- limit abstraction volumes in some cases, where there is a risk of deterioration;
- introduce the water shares accounting framework in enhanced catchments;
- integrate water discharge volumes into catchment management; and
- review the charging system.

We also explain why we have dropped the proposal for a water reserve.

Each section states the options given in the consultation, gives more detail on our current policy position, taking into account the formal responses to the consultation as well as further informal consultation and engagement with interested parties, and summarises our proposals.

### 4.1. Introducing management rules for each catchment to improve catchment management

#### **What we proposed in the consultation:**

- A system of catchment rules formed part of the approach to both Current System Plus and Water Shares approaches in the consultation, however this was not discussed in detail at that time.

The new system of abstraction permits will include catchment-specific rules which include such things as the environmental objectives for the catchment, the basis for abstraction flow controls and, where relevant, rules setting out types of trades that can be pre-approved. These new catchment rules provide the opportunity for a more holistic approach to managing water, a valuable part of our natural capital, in each catchment. They will set out clearly, transparently and in one place, how a catchment will be managed supporting local involvement of interested parties. They will be underpinned by the best available evidence on setting flows to protect catchment water ecosystems (see Annex 3). The Environment Agency will develop them working with interested parties including catchment partnerships and consult on them as part of moving to the new system (see section 5). They then will be reviewed if necessary as part of catchment reviews (see section 4.2). They will be an important step in aligning abstraction management with Defra's approach to catchment management and managing natural capital.

Taking a catchment approach also allows the Environment Agency to take a more holistic view when managing the abstraction system. This supports our aim of encouraging long term growth in a way that protects our natural capital.

#### **Summary of proposals:**

- Introduce catchment rules to establish sustainable management of abstraction on a catchment by catchment basis as part of managing our natural capital.

## **4.2. Giving reasonable certainty through a risk-based review system**

### **What we proposed in the consultation**

- Abstraction permits in catchments would be subject to review when publicly available review conditions are triggered indicating clearly to abstractors that permit conditions may be subject to change.
- Changes would be made without compensation being payable but with significant notice providing a level of certainty to abstractors. However, if risks of serious damage are identified, changes could be made immediately.
- Under reform there would be no time limits on abstraction permits.

In all catchments, the catchment rules will define a risk-based approach to instigating reviews of abstraction permits. The Environment Agency will monitor pressures on the environment and, if necessary, instigate a review to consider the need for changes to abstraction permits. The Environment Agency will publish data and information on key indicators in catchments so abstractors and others are aware of the state of their catchment water asset and the likelihood that a review could be instigated. All permits will be considered on the same basis during reviews and it will be clear to abstractors when permits are under review. This will provide increased transparency and an improved level of certainty for abstractors, which in turn will improve abstractors' ability to make long term investment decisions. In addition, risk-based reviews will allow us to remove time limits on licences, further improving certainty for abstractors who currently hold such licences.

The majority of respondents to the consultation were broadly supportive of the proposals for a more consistent approach to making changes to abstraction conditions, arguing that this would provide confidence to consider long term investment and that the proposals would provide a fairer system than is currently in place. A number of respondents made suggestions for the process that would determine actual changes to abstraction conditions of individual licences which we have since been considering, such as what notice periods would best balance the needs of abstractors and the environment. These will be considered further as part of the development of the new system.

The majority of respondents supported proposals to remove the payment of compensation for changes to abstraction conditions and to phase out the collection of the Environmental

Improvement Unit Charge (EIUC). Collection of funds to pay compensation slows down the process of changing licences, exacerbating environmental risk and drawing out the period of uncertainty for business. In addition, if individual abstractors receive compensation, there is little incentive for them to take measures to proactively manage their own risks from increased pressures on water availability or improve efficiency.

## Principles for risk-based reviews

Based on feedback from interested parties and our further policy thinking, we have developed a set of principles that will underpin the system of reviews in the new abstraction system and improve certainty for abstractors:

- time limits will be removed and the process for changing abstraction conditions will apply equally to all abstractors<sup>10</sup>. Abstractors who currently have time-limited licences will have the time limits removed when moving to the new system;
- reviews of abstraction permits would be instigated at any time if:
  - Indicators of environmental risk, set out in catchment abstraction rules (either hydrological or ecological), were triggered or if abstraction was causing serious damage to the environment;
  - Our understanding of environmental requirements or the legislation underpinning environmental requirements changes; or
  - Monitoring suggests that abstraction conditions are overly restrictive and more could be allocated whilst providing environmental protection<sup>11</sup>.
- The Environment Agency will publish regular data and information on key indicators of environmental risk from abstraction in catchments, so abstractors and others are aware of the likelihood to reviews being triggered and are enabled to better manage this important natural capital.
- the review would start with an investigation which would take no longer than six years to complete. If significant mandatory changes to abstraction conditions are required the Environment Agency would give notice of (at least 3 years) changes, except in exceptional circumstances such as where abstraction is causing serious damage;
- the Environment Agency will have the power to alter all the various elements of abstraction permits, for example, catchment rules, volumetric limits, hands-off flows and site-specific conditions and will decide, having engaged with interested parties,

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<sup>10</sup> Note, we recognise that there will remain a need for some time-bound permits. These could include temporary abstractions, such as those for construction, or temporary changes to licences in response to environmental risks where monitoring is required to measure the effectiveness of the change and potentially make further changes if it is ineffective.

<sup>11</sup> For example if hydro-morphological improvements meant that more water could potentially be abstracted whilst meeting the same environmental standards.

on a fair approach to using these powers to address the environmental risks identified whilst minimising the impact on abstractors;

- we will retain some components of the existing system to allow the Environment Agency to address certain types of outstanding unsustainable abstraction, for example if any sustainability changes remain from the current Restoring Sustainable Abstraction programme;
- there will be an appeals process open to abstractors facing changes as part of the reviews process. Further work is being done to consider how best to manage appeals in the new system. We expect the process to be similar to the existing appeals mechanism.
- Compensation will not be payable for abstraction permit changes and the Environmental Improvement Unit Charge (EIUC) will be phased out; and
- the Environment Agency will be required to set out and consult on its policy on how it will exercise its duties and powers under the new review system.

#### **Summary of proposals:**

- All abstraction permits will be potentially subject to risk-based reviews based on a set of publicly available, catchment-specific management rules.
- Data and information will be published so abstractors and others understand the state of this important natural capital and the likelihood that a review will be triggered.
- Time limits will be removed and all permits will be treated the same under the risk-based reviews approach.
- Compensation will not be paid for abstraction permit changes, but there will be clear communication when there are risks of changes to permits and a reasonable period of formal notice.

### **4.3. Limiting some permitted abstraction volumes to reduce risks of deterioration of the environment and promote resilience**

#### **What we proposed in the consultation**

- Reduce abstraction limits at transition by removing access to some currently unused water.

In catchments where there is pressure on water resources and a risk to the environment, we will remove unused licence volumes (also known as ‘paper water’) as we move to the

new system. Removing paper water is particularly important in catchments where there would be a risk of environmental deterioration if the full licensed volumes were to be abstracted. However, we will ensure that all businesses receive permitted volumes that reflect current business use and/or, in the case of water companies, meet their security of supply obligations. This will reduce the risk of unsustainable abstraction and provide a more realistic view of the water really available to businesses, which in turn improves their ability to plan.

This proposal received strong support during the consultation with many respondents recognising the value of protecting the environment. Reductions to permits will be carried out alongside other measures to reduce over-abstraction using current powers under the Restoring Sustainable Abstraction programme (see Annex 1) which some interested parties supported as another way to achieve this aim.

We will carry out a risk-based approach to removing unused volumes taking into account actual historical abstraction. More detail on how this will be calculated is set out in sections 5.1 and 5.2. The risk-based approach that we will use should help to address concerns that we will take unnecessary action to reduce permitted volumes and instead only act where necessary. We want to make sure we minimise disruption to abstractors and to water supplies at the same time as managing the risk of future deterioration of the environment.

As stated in “Water for Life” and our 2013 consultation, the UK Government does not intend to pay compensation for any losses individual abstractors incur in the change to a new system.

#### **Summary of proposals:**

- Reduce abstraction permitted volumes at transition by removing access to currently unused water in areas where there is a risk of environmental deterioration.

#### **4.4. Using water shares accounting framework to increase adaptability in enhanced catchments**

##### **What we proposed in the consultation**

###### **Water Shares:**

- Each abstractor is given 'shares' in available water sources in different parts of a catchment which drive variable short-term allocations to facilitate increased trading.

The shares accounting framework is an important potential new tool for long term management of water resources already implemented in Australia which has led abstraction reform internationally. Water shares can allow abstractors to have a clearer

view of the risks and opportunities around their access to water as they are less likely to be changed than volumetric limits. Trading will also be easier in enhanced catchments due to the increased potential to pre-approve upstream trades being possible with the shares accounting framework (see section 3.5) and we believe that an active trading market will encourage people to trade excess water with those who need it to grow their businesses.

Potentially in the future a shares framework could support more sophisticated management of water resources with short allocation periods allowing flexible 'put and take' trading from shared water resources<sup>12</sup>. In the face of climate change this could significantly enhance our resilience to underpin future growth. However we do recognise that this raises complex issues as highlighted in the consultation so we are only planning immediately to pilot these approaches in a very small number of catchments.

#### **Summary of proposals:**

- In enhanced catchments, the annual amount of water each abstractor is permitted to take will be accounted for as proportions ('shares') of the amount of water available for abstraction in different parts of a catchment but allocations will be annual apart from in a small number of pilot catchments.

## **4.5. Integrating water discharge volumes into catchment management**

### **What we proposed in the consultation**

- That all abstractors who discharge a proportion of the water they abstract close to where they take it from should be required to continue to discharge a proportion of what they take to allow the reliable allocation of water to those downstream.
- Some abstractors (mainly water companies) discharge waste water a significant distance from where it was abstracted, possibly even in another catchment. We planned to do further work to explore how we could develop a management system that allows the water resources from these discharges to be reliably available for other abstractors without compromising water quality objectives or reducing efficiency or innovation in water companies.

### **Discharges close to the point of abstraction**

The proposed approach is to require all abstractors who discharge a proportion of what they take close to where they take it from, to continue to discharge the same proportion of what they take. This will support the continuation of reliable water to those downstream.

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<sup>12</sup> Where water is released from reservoirs, re-use schemes and groundwater abstraction discharged into rivers to be traded with others.

We will do this by placing specific conditions on permits to continue to require a proportion of the water abstracted to be discharged<sup>13</sup>. A majority of respondents to the consultation agreed with this approach. We concluded therefore that this was an appropriate method for managing this type of discharge.

Discharges will of course still need to be made in compliance with the discharge permitting system to ensure continued water quality standards. Abstractors could apply to change their discharge proportion and could also trade to increase or decrease their net abstraction, especially in enhanced catchments. However, this policy will not require any abstractor who does not currently discharge to start doing so. As the requirement is to return a proportion of water taken, if an abstractor was to stop abstracting, they would not have to continue discharging.

### **Discharges at a significant distance from the point of abstraction**

Water companies and other respondents agreed during the consultation that the value of wastewater discharges made at a significant distance from where the water is abstracted should also be recognised in a reformed system, and that further work was needed to develop a mechanism for delivering this.

Further work identified that this type of discharge mainly relates to water companies. In developing a mechanism, we carried out further consultation and evidence gathering. This included discussions with water companies and those who may be reliant on discharges through meetings and an online discussion forum; a survey of water companies on possible future changes to discharges; and the development of four case studies of possible future changes to discharges.

We concluded that we need a proportionate solution that also maximises the net benefits of discharges. Our preferred option is to require water companies to assess the impact of significantly changing a discharge on the flow of the river, and any impact on abstractors and the environment<sup>14</sup>. Where there is an impact, a way of managing the discharge should be agreed with the Environment Agency to mitigate the impact. This:

- provides a holistic way of managing discharges and their impact on a watercourse, abstractors and the environment;
- minimises costs through a step-based mechanism that only requires mitigating action if there is an impact;
- allows water companies to change discharges, while at the same time protecting abstractors and the environment;
- achieves a fair and proportionate outcome for all parties; and

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<sup>13</sup> A small number of fish farm abstraction licences have such conditions currently.

<sup>14</sup> There would be an exception to the assessment where there was a legal environmental requirement to reduce discharges to protect ecosystems. For example, where a discharge may cause the natural flow level of a river to be exceeded, impacting on a water ecosystem that functions more effectively on natural flows.

- fits with the existing discharge permitting system.

The net benefits of this option over a 30 year appraisal period are also higher than all other options we considered (£2.7m). This is because it allows the value of discharges to be realised whilst at the same time incurring the minimum costs of doing so.

#### **Summary of proposals:**

- Require all abstractors who discharge water close to where they take it, to continue to discharge a proportion of what they take. Those who do not discharge currently will not be required to start doing so.
- Require water companies that discharge to rivers to assess the impact of changes to discharges on the river, and therefore the abstractors and the environment and to agree a way to mitigate any impact that might occur.

A more detailed explanation of this work is available in the [Impact Assessment \(IA\) on water company discharges](#).

## **4.6. Reviewing the charging system**

#### **What we proposed in the consultation:**

- To change abstraction charges to include an element based on water abstracted (expanding the two-part tariff).
- To charge more for reliable access to water than for less reliable access under a scaled approach.

The proposal to link charges more closely to water abstracted aimed to encourage water efficiency. Many respondents to the consultation were in favour of this principle but did not want their bills to increase. The consultation responses highlighted the need for further work on the charging proposals and suggested that further consultation would be needed to develop a suite of reforms that would complement each other and achieve the principles set out below.

Building on feedback from the consultation and further engagement we have been exploring and scoping a new scheme of abstraction charges to allow the continued charging for water abstraction and impoundment on a cost recovery basis. Modelling and analysis suggests there are a range of other issues that also need to be considered in revising the charging system including reviewing loss factors and differential charging for enhanced catchments. This all requires further work which the Environment Agency will lead and consult on, as appropriate. They will aim for an approach that:

- is simple and understandable for abstractors;
- provides a degree of continuity with charges paid under the current system;
- is predictable for customers; and



- recovers the Environment Agency's costs of water resource management.

Further work will focus particularly on:

- the current approach to adjusting charges based on seasonality;
- the standard loss factors that represent consumptiveness;
- the possibility of a closer relation between charges and actual water use;
- the basis for charging for supported sources;
- differential charging for enhanced catchments; and
- recalculation of unit charges to ensure cost recovery from transitioned licences.

#### **Summary of proposals:**

- The Environment Agency will develop and consult on a new charging system for abstraction permits.
- The charging scheme will be simple, predictable and provide a degree of continuity with current charges whilst recovering the Environment Agency's costs.

The Environment Agency will consult on any changes to the current system.

### **4.7. Decision not to develop the proposal for a water reserve**

#### **What we proposed in the consultation**

- The possibility of creating a reserve of water held by the Environment Agency which could be allocated to new or expanding abstractors in a catchment.

Based on consultation responses and further consideration, we have decided not to pursue the proposal of a specified reserve any further. The main driver for this proposal was to provide water to support existing abstractors who want to grow and to provide access to new entrants. Existing abstractors largely opposed the creation of this reserve in their consultation responses and clearly they will be able to manage their demand or trade to meet their growth requirements. Most new entrants will be able to access water in areas where there is available water and still access their intended markets.

#### **Summary of proposals:**

- There will not be a specified reserve of water.

## 5. Transition to the reformed system

How we move (transition) abstraction licences into the reformed system is a key part of reform. We want to make sure we minimise disruption to abstractors and to water supplies at the same time as managing the risk of environmental deterioration.

All abstraction licences will be included in a process to transition to the new system of abstraction permits. This section sets out an overarching national framework for our approach to transition based on the consultation responses, further engagement with interested parties and further policy development. Since the consultation we have:

- examined the impact different transition approaches would have on a range of individual abstractions;
- engaged with a range of abstractors (including those with consistent demand, variable use, energy producers and water companies) to test potential transition approaches and get input into the development of an appeals process; and
- worked with UKWIR and water companies to explore how transition for water companies could be designed.

### 5.1. A risk-based approach to reducing risks of deterioration

#### What we proposed in the consultation

- Several options for addressing unused volumes to prevent risks of deterioration, including those that apply universally to all abstractors and those that take a more risk-based approach

We will take a risk based approach to reducing licensed volumes at transition, targeting only those catchments where the use of existing licensed volumes would risk environmental deterioration and therefore not meet the requirements of the Water Framework Directive. Where the full use of permitted volumes would lead to environmental problems, we will reduce the permitted abstraction volumes towards actual past use rather than the licensed use (see section 5.2 for how this will be calculated).

This approach is supported by feedback in the consultation that showed:

- agreement that we need to protect the environment from deterioration at transition;
- very little support for a universal rule to be applied across all catchments;
- a strong preference for having a risk based approach to transition, underpinned by a national set of rules; and
- some desire for us to consider an approach that reflects a case by case assessment of need for individual abstractions.

We also received feedback on the need to consider some particular circumstances at transition. Given the infeasibility of assessing the needs of every abstractor individually, we have adapted our approach to transition, developing the risk-based approach further. In catchments where there is a risk of environmental deterioration our approach will focus on those particular licences contributing to that risk.

For example, we will not need to reduce volumes on licences that:

- include hands-off flow controls that already prevent risks of deterioration;
- are for non-consumptive purposes and already include conditions to manage risks associated with any depleted reach;
- are for abstraction at high flows, such as those for filling reservoirs, where conditions restrict abstraction to times when water is more readily available and abstraction does not risk deterioration;
- have been recently assessed as not presenting a risk of deterioration prior to transition, for example, licences brought into the system through the New Authorisations process, time limited licences that have recently been reviewed or other licences that have been adjusted to manage deterioration risks.

Although the majority of changes to licensed volumes at transition will be to annual volumes, there may be some circumstances where daily volumes need to be considered.

#### **Summary of proposals:**

- A risk-based approach will be used for assessing licences at transition.
- We will reduce volumes toward actual rather than licensed use where full use of permits will lead to environmental deterioration.

## **5.2. Methods for calculating volumes to move into the new system**

### **What we proposed in the consultation**

- A range of options for calculating volumes based on average or peak abstraction levels with several options for the time period over which unused volumes could be assessed

When calculating volumes in the new system for most abstractions, our proposed approach is to use a formula based on peak actual abstractions over a specified historic period which includes dry periods. This will reflect abstractor needs especially for those with very variable requirements, while significantly reducing risks to the environment. For water companies, we intend to take a slightly different approach given their security of supply obligations. The Environment Agency will identify all their licensed volumes that

pose a risk of deterioration to the environment<sup>15</sup> and water companies will have to individually justify their need for those volumes based on their legal obligations, emergency requirements and/or historical use patterns. If a licensed volume is required for emergency purposes, it will only be available for those purposes.

This supports our criteria for an appropriate approach, which were to:

- minimise disruption to abstractors, particularly taking into account those with variable use patterns;
- recognise water company legal obligations;
- reduce the risk of deterioration, without reducing volumes unnecessarily from licences; and
- ensure it is practical to implement.

This approach is based on feedback from the consultation where it became clear that using an 'average' measure of abstraction over a historical period to assess actual usage could cause problems for some abstractors, particularly those with highly variable abstraction patterns year to year or water companies with legal security of supply obligations. For this reason we explored alternative methodologies. This approach does not totally remove risks of deterioration but if any remain, these will be addressed through risk based reviews where further investigation is possible and more evidence can be considered (see section 4.2).

Some abstractors have recently told us they would prefer to have a hands-off flow added to their licence that would restrict their abstraction to a level that would protect the environment from the risk of deterioration, so that there would not be a need for having their licensed volumes reduced. This approach would not work for the majority of groundwater licences but in some circumstances might be suitable for surface water licences. Any abstractors interested in having their licence varied ahead of transition should contact the Environment Agency to discuss the possibility<sup>16</sup>.

The historical assessment period we use for calculating recent actual abstraction will also have an impact on the permitted volume that abstractors receive in the new system. We want to ensure that the final choice meets the following criteria:

- matches with robust records of abstraction held by the Environment Agency;
- is long enough to capture normal variations, for example crop rotations; and
- includes significant dry periods.

To meet these criteria, we will aim for an assessment period that is at least 10 years long, where robust data is available. In some circumstances, for example for more recently issued licences, alternative time periods would have to be considered.

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<sup>15</sup> Further consideration will be given to the transition for water companies in the light of development of upstream reform plans.

<sup>16</sup> In advance of transition the Environment Agency will not be able to advise how transition would affect abstraction volumes.

### **Summary of proposals:**

- For most abstractors, calculations of new permitted volumes will be based on a formula using peak actual abstractions over a representative historical period.
- Water companies will have to justify new permit volumes based on their security of supply legal obligations, emergency requirements and/or historical use patterns.
- Licensed volumes that do not contribute to the risk of deterioration are excluded from adjustment.
- Abstractors interested in having their licence varied to include a restriction rather than have their total volume reduced should contact the Environment Agency during transition.

### **5.3. Standardising permit reliability levels**

We will also give abstractors permits with roughly equivalent reliability to current licences<sup>17</sup>. Some abstraction licences have conditions that require abstractors to reduce or stop abstraction, commonly known as ‘hands-off flows’. There are many different levels at which the hands-off flow can be set. We intend to standardise certain conditions on licences across catchments.

Standardised conditions will facilitate both trading and the Environment Agency’s ability to manage water across the catchment at transition, without significantly changing abstractors’ reliability of access to water. For example, under the current system licences in the same area may have similar but slightly different hands-off flows. Where appropriate, these would be rationalised into one threshold. This will enable us to issue a new volume with a similar level of reliability to the current licences.

### **Summary of proposals:**

- Hands-off flow levels will be rationalised across the system, with new permits receiving a similar reliability to current licences.

### **5.4. Moving to a new system of permits and standard rules**

At reform the current licensing system will move into the Environmental Permitting Regulations (EPR) - as provided for in the Water Act 2014. This will mean that, in the new system, abstractors will have permits without seasonality conditions (see section 3.1) or time limits (see section 4.2). The new permits will include various conditions generally including:

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<sup>17</sup> Some abstractors may, through discussion with the Environment Agency, choose to take some lower reliability water.

- permitted volumes;
- flow and level-based conditions based on existing conditions; and
- specific local conditions including maximum daily abstraction limits.

Much of this information will be held in abstractors' online water accounts to allow ease of access and facilitate the processing of trades.

These permits will also be subject to standard catchment rules as discussed in section 4.1 which are standard rules under EPR. These will include a range of elements such as:

- for enhanced catchments, pre-approved trading rules, bonus water rules and the basis for water allocation from shares; and
- for all catchments, environmental objectives, the flow controls system and the basis for reviews.

These rules will be developed by the Environment Agency and consulted on as a part of moving to the new system.

How different types of abstractor will be affected is set out in detail in the document 'What would reform mean for abstractors?' on the [consultation webpage](#)<sup>18</sup>.

#### **Summary of proposals:**

- All new permits will be issued as part of the Environmental Permitting Regulations (EPR) with most information being accessible through online water accounts.

## **5.5. Appeals system at transition**

### **What we proposed in the consultation**

- An appeals process for new permits would be put in place to address instances of factual error.

We have been exploring how a wider appeals process might work following feedback from abstractors that the transition appeals process should be wider than considering only factual error.

We have identified a range of factors that we may consider at appeal, including:

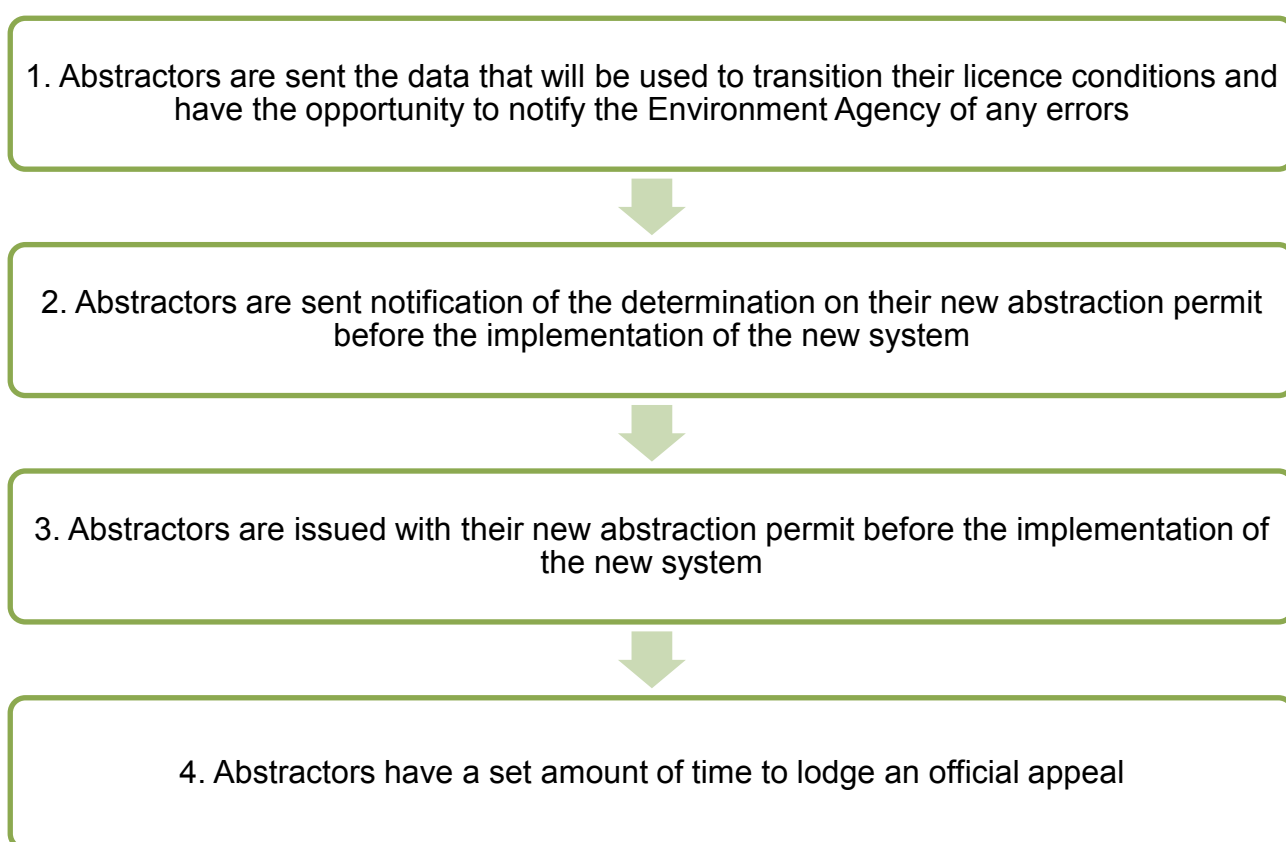
- abstractors' use has increased significantly since the historic period the Environment Agency used to assess actual abstraction;
- the Environment Agency has made a factual error;
- abstractors have invested on the presumption of retaining their licensed volume; or

<sup>18</sup> [www.gov.uk/government/consultations/reforming-the-water-abstraction-management-system-making-the-most-of-every-drop](http://www.gov.uk/government/consultations/reforming-the-water-abstraction-management-system-making-the-most-of-every-drop)

- abstraction has been constrained by other Government policy during the historic period.

There may be other circumstances that we would consider at appeal and we will seek to identify these as we continue to design the appeals system, working closely with abstractors.

Abstractors told us they would appreciate notification of what their new abstraction permit would be in advance of the appeals process commencing. This would give abstractors the opportunity to discuss the conditions and volume on their permit with the Environment Agency and could prevent the need for a formal appeal. We are considering how this could be built into the appeals timetable. Based on this, a possible sequencing of an appeals system could be as in Figure 3 below. Ahead of the allocation of new abstraction permits, we intend to consult on the catchment management rules.



**Figure 3 Potential sequence for appeals process**

There remains further work to be done on the detail of the appeals process and how this would operate within a cost-recovery framework.

**Summary of proposals:**

- Abstractors will be notified of their new abstraction allocation in advance of a formal appeals process.
- There will be an appeals process for new abstraction allocations that considers a range of factors.



## 6. Summary of reform proposals

Below we have summarised the reforms that make up our proposed approach.

Summary of reform	All catchments	Enhanced catchments
<b>Improving flexibility to address short-term water availability issues</b>		
• Remove seasonality from licences	✓	✓
• Additional water at high flows		✓
• Hands-off flows that switch on and off more gradually		✓
• New controls on abstraction at low flows	✓	✓
• Enable quicker and easier trading		✓
<b>Improving long-term sustainable management supporting growth and investment</b>		
• Management rules for each catchment	✓	✓
• Risk based reviews	✓	✓
• Reducing permitted volumes at transition where there is a risk of environmental deterioration	✓	✓
• Implementing the water shares accounting framework		✓
• Integrating water discharge volumes into catchment management	✓	✓
• Reviewing the abstraction charging system	✓	✓

## 7. Timetable and Next Steps

### 7.1. Implementation timetable

The UK Government is committed to the reform of the current abstraction licensing system by the early 2020s.

In parallel with the longer term implementation of abstraction reform, the UK and Welsh Governments are consulting on proposals to bring currently exempt abstractors into the current abstraction management system.

We will also work to understand and manage the links with upstream reform to ensure implementation of both are carefully coordinated.

### 7.2. Cross-border arrangements

The UK Government has developed a shared approach to abstraction reform with the Welsh Government. The Welsh Government has published a [separate consultation response](#)<sup>19</sup> detailing how the reforms will impact on abstractors in Wales. We will continue to work closely with our Welsh counterparts moving towards implementation.

### 7.3. Further work on non-consumptive abstractors

This document, in common with the consultation, focuses mainly on consumptive abstraction. We have started examining management of non-consumptive abstraction which we considered would not substantially change under reform. However there do seem to be opportunities to address some issues in the current system as part of reform to ensure we ‘make the most of our water resources’ such as:

- reviewing requirements to control, measure and report on non-consumptive abstraction;
- clarifying how non-consumptive abstraction should be taken into account in managing available water in the new system; and
- examining if there is value in allowing operators of water networks such as canals and ditch systems more independence in their water management.

We will consult further with relevant interested parties on these issues.

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<sup>19</sup> <http://gov.wales/consultations/environmentandcountryside/making-the-most-of-every-drop/?skip=1&lang=en>

#### **7.4. Approval of state aid**

State aid is where state resources are used in a way which gives a financial advantage to certain undertakings (such as businesses), thereby distorting competition between those undertakings and their competitors. The granting of state aid is strictly regulated under EU law. We will be consulting with the European Commission to determine whether the proposed reform package involves state aid, which would require a formal notification and approval.

## 8. Glossary

<b>Abstraction</b>	Removal of water from a surface or groundwater source.
<b>Abstraction conditions</b>	Conditions attached to an abstraction permit which can stop or reduce abstraction, for example a low flow (a Hands-off Flow), a seasonal restriction or an end date.
<b>Abstraction licence</b>	The authorisation granted by the Environment Agency to allow the removal of water from a surface or groundwater source. Licences are currently needed where more than 20 cubic metres (approximately 4,400 gallons) a day is removed. There are different types of licences, for example 'seasonal' licences.
<b>Abstraction Management System</b>	The management system that governs the removal of water from surface and groundwater sources.
<b>Abstraction Permit</b>	Under abstraction reform proposals, abstraction permits, with conditions linked to catchment rules, will replace an abstraction licence. Abstraction permits will be issued by the Environment Agency.
<b>Abstractor</b>	An individual / organisation that removes water from a surface or groundwater source, for example a farmer or energy company.
<b>Allocation</b>	(Water Shares option) A volume of water allocated to an abstractor for a fixed time period, for example, 2 weeks.
<b>Allocation period</b>	(Water Shares option) The period of time that an allocation covers.
<b>Catchment</b>	<p>The geographical area from which rainwater and groundwater will collect and contribute to the flow of a specific river.</p> <p><b>Enhanced catchments</b> – Under abstraction reform, some catchments would be classified as enhanced depending on the water scarcity and benefits of trading.</p>
<b>Catchment abstraction rules</b>	Published standard rules under the Environmental Permitting Regulations about abstraction in a particular catchment, which would set out information about standard abstraction rules such as flow thresholds; the trading rules

	and abstraction permit review conditions.
<b>Consumptive abstraction</b>	Abstraction where a significant proportion of abstracted water is used and is not available for return to the water source after use. For example, water used for spray irrigation is all used during the irrigation process.
<b>Current System Plus</b>	Abstraction reform option that aims to adapt existing management tools by using catchment flow trigger thresholds to improve access to available water.
<b>Discharge</b>	The return of abstracted water to a surface or groundwater source after being used. Also referred to as returned water.
<b>Downstream abstractor</b>	An abstractor lower down in a catchment towards the sea.
<b>Environmental Flow Indicators (EFIs)</b>	An indicator of water flow levels which allow the monitoring and the prevention of environmental deterioration of rivers, and set in line with UK standards from UK Technical Advisory Group.
<b>Environmental Improvement Unit Charge (EIUC)</b>	A charge payable by abstractors which is used in some cases to cover the costs of compensating abstractors where their abstraction licences are compulsorily varied or revoked to reduce the risk of environmental damage caused by abstracting too much water.
<b>Environmental Permitting Regulations (EPR)</b>	The single environmental permitting regime created under the Pollution Prevention and Control Act 1999. Powers under the Water Act 2014 enable Defra to add abstraction licences to the Environmental Permitting regime. This will be implemented as part of abstraction reform.
<b>Exemptions</b>	The abstractions that can currently be made without an abstraction licence being needed.
<b>Groundwater</b>	Water that is contained in underground rocks i.e. an aquifer.
<b>Hands-off Flows (HoFs)</b>	A condition attached to an abstraction licence which states that if flow (in the river) falls below the level specified on the licence, the abstractor will be required to reduce or stop the abstraction.
<b>Hands-off Level</b>	A river flow or borehole (groundwater) level below which an

<b>(HoL)</b>	abstractor is required to reduce or stop abstraction.
<b>Impact assessment</b>	It is both: <ul style="list-style-type: none"> <li>• a continuous process to help the policy-maker fully think through and understand the consequences of possible and actual Government interventions in the public, private and third sectors; and</li> <li>• a tool to enable the Government to weigh and present the relevant evidence on the positive and negative effects of such interventions, including by reviewing the impact of policies after they have been implemented.</li> </ul>
<b>Licensed volumes</b>	The amount of water an abstraction licence allows an abstractor to abstract i.e. from a river or aquifer.
<b>Ofwat</b>	The economic regulator of the water and sewerage sectors in England and Wales.
<b>Pre-approved trading</b>	The Environment Agency would develop rules setting out the types and volumes of trades that abstractors could make without individual approval for the trade.
<b>Reservoirs</b>	A water storage system in which abstractors, such as farmers, could store water abstracted at times of greater water availability, i.e. in winter at high river flows, to use when water availability was more limited.
<b>Restoring Sustainable Abstraction (RSA) Programme</b>	The Environment Agency is reviewing thousands of abstraction licences to find out whether water abstraction is causing environmental problems. Where they find licensed abstraction is a problem, they work with abstractors to find solutions. This is the Restoring Sustainable Abstraction programme.
<b>Returned water</b>	The return of abstracted water to a surface or groundwater source after being used. Also referred to as discharge.
<b>Re-use scheme</b>	A scheme where treated effluent is reused by an abstractor. In many cases a river is used as the conduit.
<b>River Basin Management Planning</b>	A river basin is the area of land from which all surface run-off and spring water flows through a sequence of streams, lakes and rivers into the sea at a single river mouth, estuary or delta. It comprises one or more individual catchments.

	For each River Basin District, the Water Framework Directive requires a River Basin Management Plan to be published. These are plans that set out the environmental objectives for all the water bodies within the River Basin District and how they will be achieved. The plans are based upon a detailed analysis of the pressures on the water bodies and an assessment of their impacts. The plans must be reviewed and updated every six years. Plans are already in place and are currently being updated with final updates to be published by the end of 2015.
<b>Seasonal licences</b>	Licences that restrict abstraction to certain times of the year.
<b>Spray irrigation</b>	Spray irrigation is a form of irrigation in which pressurised water is sprayed over plants to provide them with water. Irrigation is the process by which water is brought to dry land through artificial means such as pipes and hoses.
<b>Surface water</b>	This is a general term used to describe all water features such as rivers, streams, springs, ponds and lakes.
<b>The Environment Agency</b>	The regulator that licenses water abstraction in England.
<b>Two part tariffs</b>	A way of charging an abstractor for abstracting water which takes account of both the amount of water they are licensed to use and the actual amount of water they used.
<b>Transition</b>	The process of moving to a reformed abstraction management system.
<b>Unsustainable abstraction</b>	The removal of more water from the environment (i.e. rivers and aquifers) than it is able to cope with.
<b>Unused water</b>	Water that is authorised to be abstracted under a licence but which the abstractor does not abstract from the water source.
<b>Upstream reforms</b>	Reform of services related to supplying water or treating wastewater / sewerage.
<b>Upstream trades</b>	Where the abstractor buying abstraction rights is upstream from the abstractor selling the abstraction rights.

<b>Water body</b>	Areas of either surface water or groundwater at which assessments are completed for action under the Water Framework Directive.
<b>Water ecosystems</b>	Communities of organisms that live in an area of water and are dependent on each other and on their environment.
<b>Water Framework Directive (WFD)</b>	European Union legislation – Water Framework Directive (2000/60/EC) – establishing a strategic and framework for protecting and improving the whole water environment.
<b>Water sector</b>	Companies providing water services and sewerage services to customers in England and Wales.
<b>Water Shares</b>	Abstraction reform option that aims to adapt existing management tools by using Water Shares to define the available water resource held by abstractors.



# Annex 1 – Delivering a healthy environment through managing abstraction and flows

Taking too much water from freshwater or tidal rivers, canals, lakes and groundwater damages the environment. Changes in the natural flow and level of water can also affect some internationally recognised conservation sites (Natura 2000) and the wildlife they support; particularly water dependent Special Areas of Conservation.

While many abstractions or impoundments are sustainable, some are either damaging the environment or could cause damage in the future. This prevents healthy rivers being available for people and the wildlife that depend on them.

Some abstractions from groundwater and surface waters can cause rivers, lakes and wetlands to dry up un-naturally or more frequently, causing problems for wildlife including preventing the migration of fish. Reduced flows can change the natural river habitats affecting wildlife that need faster flowing and/or deeper water or that are impacted by the increase in fine sediment deposited on the river bed. They also reduce the dilution of polluting materials in the water.

Abstractors and the Environment Agency need to take action to deal with both the legacy of historical environmentally unsustainable abstraction licences and to avoid allowing new abstractions that do not protect the environment.

River Basin Management Plans show many of the abstraction and flow issues that impact on the environment. In a number of areas abstraction and flow is already not supporting a healthy environment and a range of actions will need to be taken in England over the next 6 years. While these will go a considerable way to supporting a healthy environment, additional action will still need to be delivered after abstraction reform is implemented in the early 2020s.

## Prioritising action over the next six years

**The Environment Agency will continue to ensure new licences do not pose a risk to the environment.** The Environment Agency publishes abstraction licensing strategies that explain how they will consider applications for new licences as well as the actions that might be needed on existing licences. New licences will only be issued if they adequately protect and possibly improve the environment. Licensing strategies help improve understanding of the risks to the environment and where constraints are likely to be required to either current or potential abstractions in the future. This helps businesses to understand the availability of water in their catchment to inform their business planning.

**The Environment Agency will continue to promote the efficient use of water.** All abstractors and users of water need to recognise the value of water to themselves, others and the environment. Reducing the amount of water users need to take from the ground

and rivers, while using water more efficiently is critical to reducing demands for water and impacts on people and the environment. More action is needed and water efficiency by abstractors will be considered on licences particularly when licences are issued. The Environment Agency will support abstractors that are facing constraints on their licence to understand the options they have to use water more efficiently and sign-post them to more detailed information.

**The Environment Agency will finalise delivery of the Restoring Sustainable Abstraction (RSA) programme, including protecting high value conservation sites by March 2020.** The Environment Agency has made significant progress in addressing local unsustainable abstractions through the Restoring Sustainable Abstraction programme already. Since 2008, about 230 licences in England have been changed and around 200 licences are still being considered. This action has returned just over 27 billion litres of water per year to the environment - this is enough water to supply half a million people, or a city the size of Liverpool, with water for one year. The remaining ~200 licences in the programme will be made sustainable by March 2020 through voluntary licence changes or by serving notice for compulsory changes.

**We are consulting on bringing currently exempt abstractors into the licensing system to better manage risks to the environment.** Some abstractions have historically not needed a licence. We now intend to bring most of these into the abstraction licensing system and are consulting on how this should happen. As the Environment Agency brings these abstractions into the licensing system, they will refuse or constrain licences for abstractions where this is necessary to protect the environment from serious damage. The Environment Agency will support abstractors, who receive more constrained access to water, to understand the options they have to adapt to these constraints and sign-post them to more detailed information.

**The Environment Agency will further progress a programme to revoke unused licences that pose a significant risk to the environment if used.** Hundreds of licences have not been used for a number of years. If abstraction was now to start at some of those sites, there could be damage to the environment. The Environment Agency will take risk based action to revoke such licences to reduce these risks to the environment and to reduce the amount of action that might be needed on other in-use abstraction licences.

**The Environment Agency will continue to review the environmental risks from time-limited licences when they come up for renewal working closely with abstractors.** These licences are granted for a limited time period to allow the environmental risks of the abstraction to be periodically reviewed. Many of these licences (>2000) are due to end by 2021. This means that many abstractors will be looking to apply for replacement licences. The Environment Agency will only grant replacement licences where the abstraction is environmentally sustainable, abstractors can demonstrate they have a continued need for the water and that they will use it efficiently. When this happens, the Environment Agency will work with abstractors to minimise impacts on their business while addressing

environmental risks. The Environment Agency will support abstractors who receive a more constrained licence to understand the options they have to adapt to these constraints and sign-post them to more detailed information.

**The Environment Agency will focus measures particularly on preventing risks of serious damage to the environment and will prioritise the most immediate risks.**

Investigations during the River Basin Management Planning process have identified that some current abstraction licences are causing or posing risks of serious damage. The Environment Agency will need to change abstraction licences in areas identified as not supporting a healthy environment and, where there is a risk of serious damage to the environment occurring, and assessments show the need to take action. These include some significant water company licences for abstraction from groundwater, which may be used more heavily to meet demand from an increasing population, creating a risk of environment deterioration. There are also a number of other abstractors with licences causing or posing risks of serious damage.

The Environment Agency will work with abstractors in surface water and groundwater bodies where serious damage is occurring or could occur to identify measures needed to address the problem while minimising the impacts on their business drawing on recent lessons from renewing time-limited licences. Work will begin in 2016 focusing on a number of catchment waterbodies where risks of serious damage are most significant. Alternative options to licence changes will be explored with abstractors and stakeholders first, e.g. in river improvements etc. Where action on licences is necessary, abstractors should expect their licences will be constrained over the next 6 years. Those licences posing the most immediate risks to the environment will be prioritised for action.

The Environment Agency will make changes to licences as soon as possible to protect and reduce damage to the environment. This includes securing licence changes with time bound conditions that will ensure works are completed as soon as possible. The Environment Agency will support abstractors whose licences are constrained to understand the options they have to adapt to these constraints and sign-post them to more detailed information. Many abstractors, including water companies will be able to adapt to constraints to their licences through changes in their operating approaches. In some cases infrastructure changes may be needed. Where solutions may take time to construct for public water supply, water companies will be expected to manage their supply networks to ensure they are minimising impacts in the most environmentally sensitive areas.

# Annex 2 – The approach to managing groundwater

## Abstraction Reform and hydrogeology

In December 2013 we published our consultation [“Making the most of every drop”](#) which set out the proposed reforms for the water abstraction management system.

For all abstractions (groundwater and surface water) we proposed:

- converting seasonal licences into abstraction permissions based on water availability; and
- linking abstraction to water availability.

In general, groundwater resources respond to changes in weather less quickly than surface water resources. This means that linking water allocation to availability is less relevant for groundwater. Changes to the way we manage groundwater abstraction will be less pronounced than those for surface water.

We consulted on a process of adjusting abstraction to match the quantity of water received as recharge<sup>20</sup> into the aquifer. Groundwater availability would be tracked by comparing a historical, we suggested 25-years, record of long term average groundwater recharge with actual recharge. The total groundwater abstraction permitted from an aquifer over a year could then be adjusted to fit actual recharge. Over a longer period of time, this flexing could help to balance abstraction and recharge. We also said that we would do more to encourage trading of groundwater abstraction rights.

Responses from a range of abstractors asked for further information on how abstraction of groundwater would be linked to availability in a new system. Responses also urged that any new approaches to groundwater regulation receive thorough testing so that they can be tailored to suit different types of aquifers.

### What has been done since the consultation?

In 2014 the Environment Agency assessed the benefits of the proposals on different types of aquifer. The Environment Agency used three groundwater models to help do this. These models covered three groundwater dependent areas; the Devon Sandstone, the Berkshire Chalk and the Lincolnshire Chalk. The models also used data on climate predictions. This allowed us to test how resilient the proposals would be up to the year 2100.

The findings of this work are set out below.

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<sup>20</sup> Groundwater recharge is the process by which rainfall tops up aquifers.

## **Linking groundwater abstraction to water availability**

The Environment Agency found that adjusting groundwater abstraction based on a comparison of recent recharge and historical recharge did not work well. Some of the approaches tested reduced abstraction by more than 50% with limited environmental improvements. This is because of the unpredictability of seasonal rainfall and the slow response time of many aquifers to reduced abstraction. It is better for the abstractors and the environment to vary groundwater abstraction through a catchment review process that is able to consider the individual attributes of the aquifer, the pressures the catchment is facing and to use expert judgement to develop the best response.

## **Abstraction permit trading**

Following reform, some groundwater abstractors in enhanced catchments<sup>21</sup> will enjoy quicker and easier trading due to the establishment of pre-approved trading rules. The modelling showed that some trades can help the environment by shifting abstraction pressure away from sensitive sites. For example, some coastal aquifers prone to seawater ingress can benefit from moving abstraction away from the coast. By helping to manage environmental risks some types of trades have the potential to also increase water availability. Because many of the larger abstractors are water companies, these benefits are often greatest when they participate in trading.

## **Groundwater augmentation or put-and-take trading**

This is where a groundwater abstractor can discharge to a river to allow downstream surface water abstractors to operate. Modelling on the Lincolnshire Chalk demonstrates that this 'put-and-take' trading can be effective at allowing surface water abstraction to continue during dry periods. For a small number of catchments, these approaches could have an important role to play by increasing resilience to climate change. Put-and-take trading will be much easier to implement in pilot catchments<sup>22</sup> where short term allocations enable the water that's discharged to be accurately allocated to specific downstream abstractors. Depending on the results of the pilots, this could be extended.

## **Changes and development of approach following the consultation**

Following these investigations, we have changed and developed our proposed approach for managing groundwater.

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<sup>21</sup> Under abstraction reform, some catchments would be classified as enhanced depending on the water scarcity and benefits of trading.

<sup>22</sup> A small number of enhanced catchments will also be pilot catchments. In these catchments, we will look to pilot approaches for more sophisticated allocation of water including shorter term allocation periods. These are more compatible with approaches like put and take trading.

Groundwater abstraction permits will only be reviewed as part of a catchment rules review process. We will not uniformly vary allocations on the basis of pre-defined rules linked to recharge or weather patterns.

The modelling demonstrated the potential value of put-and-take trading where catchment characteristics allow groundwater to usefully support surface water abstraction downstream. Catchment rules documents will identify these opportunities.

## **Next Steps**

We will continue working towards the implementation of abstraction reform for all abstractors. For groundwater abstractors, this will include finalising transition approaches and developing catchment rules to support trading in enhanced catchments.

To prepare for implementation the Environment Agency are undertaking an internal catchment level implementation trial which will include groundwater abstraction licences. This will be completed in early 2016 and will provide preliminary guidance on how best to move existing groundwater abstractions into the new system.

# Annex 3 – An evidence based approach to protecting water ecosystems

## Abstraction reform and hydroecology

In December 2013 we published our consultation [“Making the most of every drop”](#) which set out the proposed reforms for the water abstraction management system.

The consultation did not include a specific question on how environmental flows should be set and managed within a new abstraction management system. However, some of the responses touched upon this when answering questions relating to other aspects of the reform proposals, including:

- converting seasonal licences into abstraction permissions based on water availability;
- linking abstraction to water availability for surface water and groundwater abstractions; and
- using a regulatory minimum level to protect the environment at very low flows.

Responses from a range of abstractors raised concerns about how environmental needs are defined. Some suggested an approach based around site-specific understanding of environmental flow requirements founded on hydrological and ecological monitoring data.

Other responses highlighted that the evidence for environmental flows/levels should be reviewed and updated and that further work was needed to explore if there were alternative approaches which could better reflect environmental flow/level requirements.

National and local environmental Non-Government Organisations highlighted that the means of defining how much water is available at a particular time and place is a critical underpinning issue for reform. They stated that a well-founded basis for setting environmental flows (e-flows) and environmental levels (e-levels), and hence the water available for use above those thresholds, is of fundamental importance across the whole of the reform agenda.

A summary of the responses to all the consultation questions can be found on the [consultation webpage](#).

## Managing abstraction and the water environment

A supporting document to the 2013 consultation called [‘Managing abstraction and the water environment’](#) sets out how the Environment Agency currently manages abstraction and the impacts on the environment. This sets out how flow standards have been developed by the UK Technical Advisory Group (UKTAG) for the Water Framework

Directive (WFD) and how this has been applied in England through the use of the Environmental Flow Indicator (EFI).

The Environment Agency is committed to ensuring sustainable management of flows is underpinned by a sound evidence base. They work as part of the UK Technical Advisory Group to facilitate the development of approaches for WFD and have a programme of review and revision through which improvements are made.

## **What work has happened since the consultation?**

Since the consultation a number of projects have been completed or are in progress, aimed at helping the Environment Agency continually to improve the evidence base on environmental needs for abstraction reform, taking on board the points raised in the consultation. Copies of the completed reports are available on request through the Environment Agency.

The “*Environmental flows: learning good practice from other countries*” project looked at the experiences of setting environmental flows from other countries around the world. It evaluated how the good practice and lessons learnt elsewhere could be used in England’s water resource management in future. Our current approach to setting environmental flows in England is primarily a hydrological approach, underpinned by hydroecological science. The results from the project showed that this approach is at the forefront in Europe in comprehensively applying hydrological e-flows to managing abstraction in all waterbodies, as part of the requirements of the WFD. There could however, be opportunities to learn from elements of other countries’ approaches to setting e-flows and, if required, build on the strong foundation already in place in England.

The “*Evaluation of WFD Water Resources investigations*” project looked at what we can learn from how data and evidence is currently used to inform decisions on unsustainable abstraction for WFD. The project reviewed summary information from over 300 investigations. It concluded that the extent to which biological information was used to inform the investigation outcome varied. Some investigations placed more emphasis on hydrology, whilst in more complex / modified catchments, decision-making relied more on biology, with investigations extended to better understand the degree to which abstraction and other pressures caused an impact on the biology. The study highlighted a number of points which are being considered and which will help inform future approaches.

The “*Environmental flows: systematic evidence review*” project, currently in progress, aims to collate and objectively summarise investigations into the effect and impact of artificial alteration of flow on the ecology in British rivers.

Previous evidence reviews have included a measure of subjectivity in assessments of the available evidence. By analysing the existing evidence in a systematic way, a clearer picture of the evidence base for environmental flows will be generated. This should allow the development of associated processes which account for differing levels of strength in



the evidence base for environmental flows. Further information on the project and the protocol which details the method and approach that will be used to conduct the review, will be available on the Collaboration for Environmental Evidence (CEE) website ([www.environmentalevidencejournal.org](http://www.environmentalevidencejournal.org)) for peer review.

The Environment Agency is also improving the knowledge base using information gathered from its monitoring networks. For example there are projects looking to understanding the impacts of water abstraction and flow restoration on river ecology, including an analysis of ecological response following measures to alleviate abstraction pressure in Cumbria & Lancashire.

## **Wider work linking to abstraction reform**

The Common Standards Monitoring Guidance (CSMG)<sup>23</sup> for riverine Natura 2000 (N2K) Protected Areas and SSSIs have been reviewed by the Joint Nature Conservation Committee and revised objectives published in 2014. The guidance includes a suggested method to assess flow compliance.

The Environment Agency was a member of the EU Working Group's development of e-flows guidance. The resulting European Common Implementation Strategy (CIS) guidance<sup>24</sup> will help set the framework for how we develop our e-flow methods for Water Framework Directive alongside other European Member States.

## **Next steps and future directions**

The Environmental Flow indicator (EFI) is subject to periodic review to ensure that best available evidence is used. These reviews are undertaken about every 6 years as part of the UK Technical Advisory Group<sup>25</sup> (TAG) flow standards review and fed into relevant River Basin Management Plan cycles following consultation and agreement across the UK. The latest review has begun and will incorporate the outputs from the evidence packages mentioned above. This will sit alongside work to develop how we use environmental flow information in WFD classification and abstraction regulation.

A key objective of abstraction reform is to develop more locally based abstraction catchment management decision making. Hence the Environment Agency will aim to establish systems to base catchment environment flow targets on the best available local evidence, as it becomes available, while still using a nationally consistent framework. The main source of catchment specific evidence will be catchments reviews but any other appropriate quality assured research or investigations will be drawn on. This will inform

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<sup>23</sup> Common standards monitoring guidance for rivers version January 2014 JNCC

<sup>24</sup> Ecological Flows in the implementation of the WFD EU guidance document 31 2015

<sup>25</sup> The UK Technical Advisory Group (UKTAG) is a partnership of the UK environment and conservation agencies which was set up by the UK wide WFD policy group consisting of UK government administrations. It was created to provide co-ordinated advice on the science and technical aspects of the European Union's Water Framework Directive (2000/60/EC). Technical work is undertaken by groups reporting to UK TAG known as 'task teams'. Flow specific work is undertaken by the Water Resources Task Team (WRTT).

abstraction permit constraints, particularly catchment rules. Over the longer term we envisage this may move us towards a greater degree of national variability in the environmental thresholds which will be increasingly based on catchment specific evidence.