



# A right to water?

**Meeting the challenge of  
sustainable water allocation**



## Foreword

The Anglian Water region is on the frontline of the global climate change challenge. It serves the largest geographical area of any water company in England and Wales and is the driest and fastest growing in the UK, with over a quarter of the land below sea level. The impact of climate change will be felt here first, with likely severe consequences.

With global demand for water expected to increase by 30 per cent by 2030, Anglian Water has an important role to play in shaping how to respond to the challenge of future water resourcing.

Anglian Water has a strong track record in securing and conserving water resources. Despite a 20 per cent population growth in the region since 1990, its successful demand management strategy means that it supplies the same amount of water today as it did those 20 years ago. Anglian Water is proud of that track record and looks to draw on that experience as we move forward.

We need to explore and exploit innovative solutions. Our partnership with Frontier Economics does just that.

We present this report as an important contribution to the debate on how best to consider the decisions, processes and arrangements for how the water that sustains our environment and economy is protected and shared between different users – what we've termed water allocation.

We recognise the importance of protecting the natural environment and safeguarding the value it brings to our society – it is part of our 'natural capital'. Individuals, as well as families, communities and businesses all rely on water: it is essential to our personal well-being, to our society and environment, and to our economic prosperity.

The current arrangements for balancing these needs have worked well so far, but in the face of serious challenges, making the arrangements for allocation of water sustainable, efficient and effective will be crucial.

Our project set out to answer:

- How can we ensure the environment gets the water it needs while securing a reliable public water supply?
- How can we ensure everyone understands the true value of water and that we have the right conditions for making good economic decisions and efficient investment?

Fundamental to each of these is the essential question about 'rights' to water. We have all grown up engaging with 'our' water, but we suggest this approach may have to change. We think that markets have the potential to offer new approaches that will help answer these questions and balance the needs of all users by revealing value and enabling effective decision-making.

We think that today's water allocation arrangements may need to adapt to meet the challenges and uncertainties that we face. We make specific suggestions for improvements that build on the current approach, but we do not underestimate the effort that will be required to make positive changes.

For our part, Anglian Water is committed to changing fundamentally how we all engage with and use water. Our campaign for the future is called Love Every Drop and our ambition is to put water at the heart of a whole new way of living – across the UK. The work presented in this report is an important part of this ambition.

We think that the time is right for embarking on a new course and would welcome the opportunity to be part of other pilot projects to test these ideas in practice.

**Peter Simpson**  
Managing Director  
Anglian Water

**Dan Elliott**  
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## Setting the context

Climate change, increasing demand for water (from economic and population growth) and the implementation of more stringent environmental standards are likely to increase the stress on water resources in the future. This could lead to greater tensions around how scarce resources are shared between different users including water companies, agriculture, electricity generators and the environment.

The current administrative arrangements for allocating water between users (through abstraction licensing) have generally worked well. However, we cannot be certain they will be effective in the future when faced with increasing water scarcity.

As a result, Defra, the Environment Agency and Ofwat are all looking at options for reforming the current water allocation regime. This report presents Anglian Water's and Frontier Economics' assessment of the need for reform of the water allocation regime, based on reviewing available evidence, underlying theory and the experience from other countries. From this we have developed a series of recommendations for improving the current regime.

Our recommendations are designed to ensure that water ecosystems continue to be protected and that the public remains able to access a safe, affordable and reliable water supply. They also aim to improve on current arrangements by ensuring our valuable water resources are put to best use, in particular by:

- **recognising the importance of sharing water in a way that acknowledges its value to competing users;**
- **allowing water use to adapt over time in response to changing circumstances; and**
- **encouraging investment and innovation through clear and secure water property rights.**

With this in mind our recommendations focus on:

- **improving existing processes for achieving sustainable abstraction levels by changing licensed volumes; and**
- **removing barriers to trade to facilitate greater water and water rights trade between competing users.**

Our review suggests that there are good reasons to start improving the robustness and effectiveness of the system now. Given the prospect of increasing, but uncertain, pressure from climate change, flexible adaptive solutions are important. For this and other reasons, we believe water and water rights trading – involving all water users, not just water supply companies – may have a role to play. Our reforms will help water move to where it is most valued through 'competition for the resource' and ensure water is put to best use while safeguarding the environment and public water supply. This result does not rely on competition existing in other segments of the water supply chain and therefore the report does not consider the scope for using market-based mechanisms elsewhere.

In developing these recommendations we have taken a wide remit and assessed potential reforms from the perspective of all water users, not just water supply companies.

This report builds on work we have already done on the prospects for sharing and trading water resources between water companies. This has been set out in Trading Theory For Practice, published in collaboration with Essex & Suffolk Water and Cambridge Water in October 2010.

**Further details of our recommendations and assessments are contained in the unabridged version of the report, which can be found at [www.anglianwater.co.uk](http://www.anglianwater.co.uk)**

## What makes a successful and sustainable water allocation regime?

The water allocation regime covers the legislative framework, policies and processes for issuing water rights, setting aside water to meet the needs of the environment, adapting rights and transferring or trading these rights.



Salt Marsh

In order to evaluate present arrangements, identify the need for reform and, if appropriate, assess specific policy options, clear objectives are needed.

Although the current regime has generally performed well, the need for some reform appears necessary as the current regime is beginning to be tested by increasing water scarcity. This is discussed further in the following section. But before considering this we have looked at what objectives should guide policymakers in creating a more sustainable regime.

At present, it is difficult to identify a single set of objectives from the stated policies of the department and agencies (Defra, the Environment Agency and Ofwat) involved in administering the regime. On this basis we recommend the following.

### Government should clarify its objectives in relation to water allocation

1. Defra should develop a set of clear, overarching objectives, which relate specifically to the water allocation regime as part of its upcoming Water White Paper. These should be used to guide future policy development and to evaluate the success of any reforms in this area. Consideration should be given to the objectives proposed in this report.

In the absence of a clear set of high-level objectives, we propose the following four, which we have used to guide our reform assessments.

- **protecting the environment and in-stream uses by providing sufficient water to sustain ecosystems in the face of climate and demand pressures;**
- **ensuring affordable and reliable water supplies for the public and other users. This reflects the status of water as an essential service, and its role in protecting public health;**
- **encouraging the efficient allocation and use of water by ensuring water is allocated to its highest value use over time, in order to ensure that the maximum benefit for society is derived from the use of the scarce water available; and**
- **encouraging improvements in the efficiency of water use over time. When users are appropriately incentivised to invest, innovate, increase productivity and lower costs, over time the value generated from the use of water will improve.**

## Why is reform needed?

The current water allocation regime has generally performed well. The Environment Agency's existing water resource management policies have protected the environment from damage, while Ofwat's price regulatory regime has ensured an affordable and reliable public water supply.

Despite periodic droughts, the current arrangements are only beginning to be tested by water scarcity. With the availability of relatively cheap sources of supply there has been no pressing need to ensure water resources are used or allocated efficiently.

Looking ahead, we think that sustained water scarcity – at least in some parts of the UK – is a real possibility. This may be reflected, both in a long-term decline in water availability and in greater volatility of supply. Both would result in the water allocation regime coming under increasing pressure. In particular, two key issues emerge.

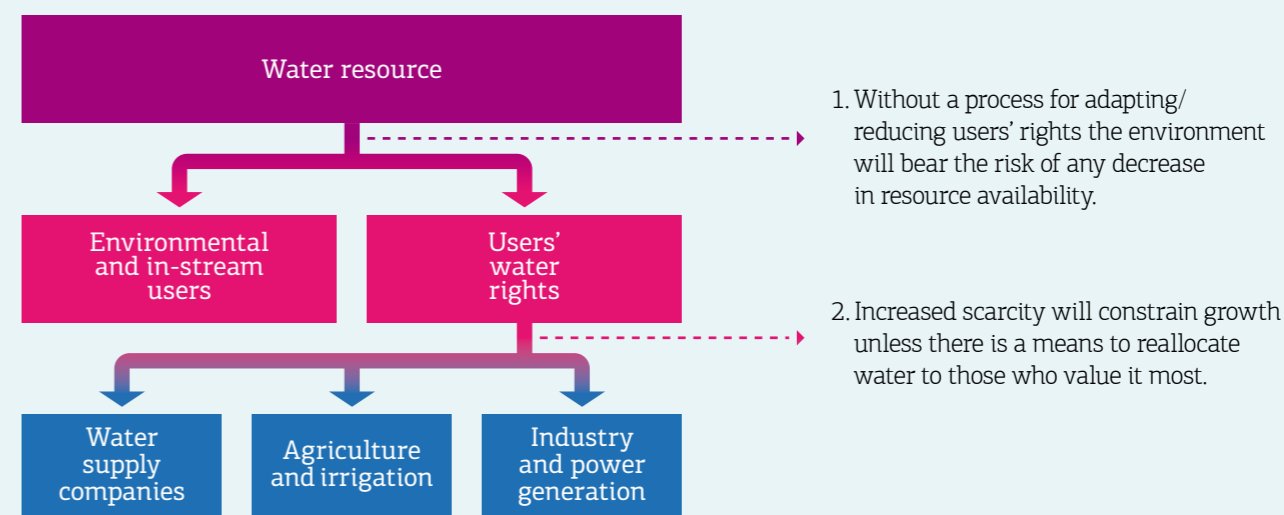
- **First, there will be growing pressure to restore more sustainable levels of abstraction. Protecting the environment in the face of uncertain climate change impacts will require a mechanism for reducing abstraction levels when it is deemed necessary to prevent unacceptable environmental damage.**

- **Second, it will be increasingly necessary to reallocate water between users in order to maximise the value from its use. When water is scarce and increasing supply is expensive, a means of reallocating water ensures that available supplies are used most efficiently. Where existing water users are not those who generate the most value from use of the available water, then society as a whole is not getting the maximum benefit. To ensure the efficient use of water, an effective mechanism is needed for reallocating it, over time, to those users who value it most.**

The link between these issues and the key choices involved in allocating water is shown in figure 1.

Figure 1

### Links between the emerging issues and the key choices of the water allocation regime



## Moving towards more sustainable levels of abstraction

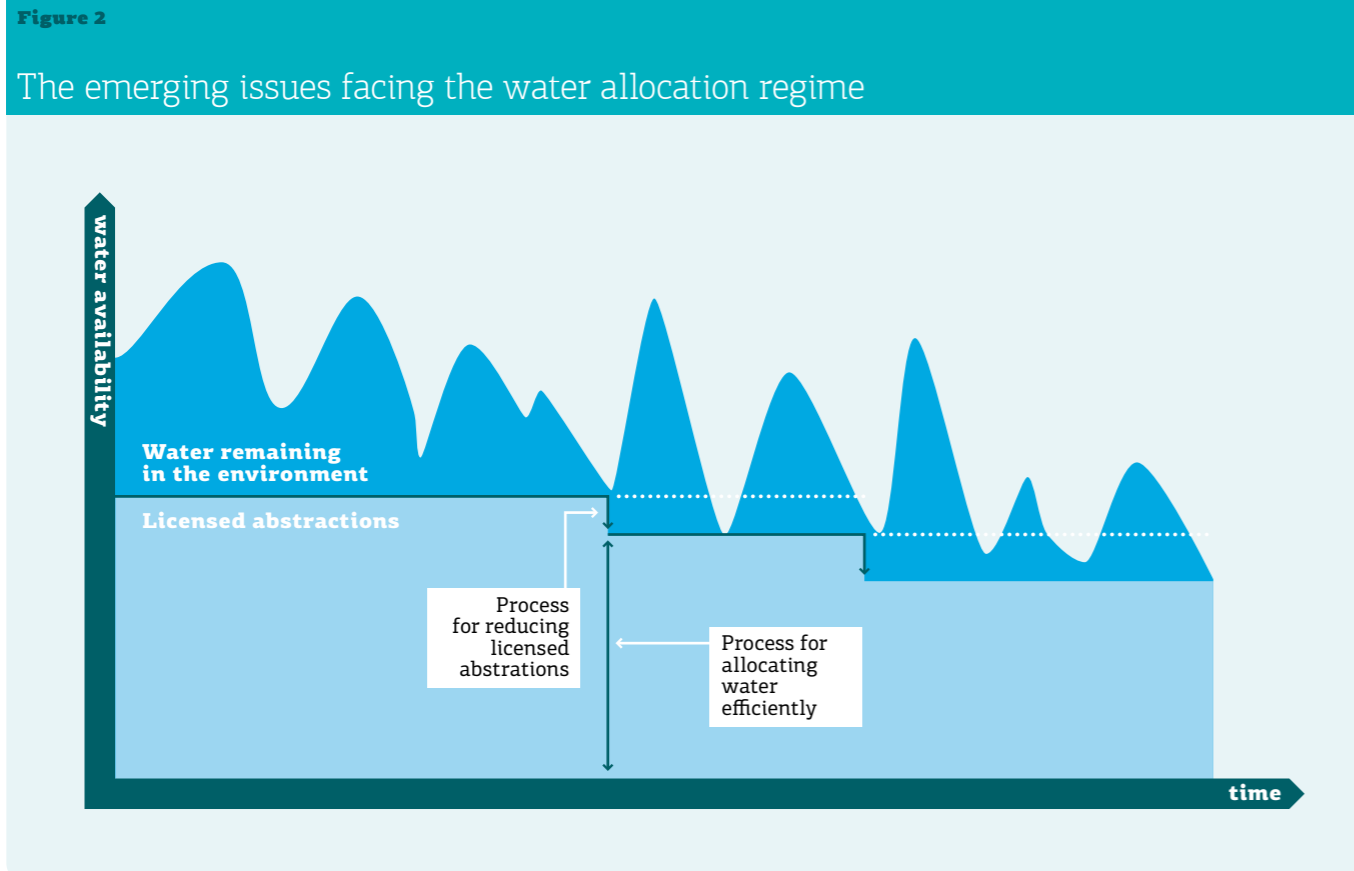


Figure 2 illustrates how these issues emerge. Over time the water 'available' declines and becomes more volatile as a result of the impact of climate change. This water may provide benefit by either being set aside for licensed abstractions or by remaining in the environment.

If water availability declines over time, licensed abstractions may need to be reduced in order to maintain the balance between the water required for the environment and consumptive uses. This may involve successive reductions in total licensed abstractions. Consequently, less water will be available for abstraction. This makes the methods by which water is allocated between users, more important, in order to ensure that the value from abstracting and using water is maximised.

This analysis suggests that reforms should be focused on three key processes within the water allocation regime.

- **processes that determine the appropriate volume of water which can be taken from the environment – i.e. that define the sustainable level of abstraction;**
- **processes that adapt or reduce abstraction to this sustainable level; and**
- **processes that effectively allocate water taken from the environment among competing uses.**

This report does not deal in depth with the first of these processes. This is a matter that is influenced by scientific evidence on the impact of different levels of abstraction, and judgements about the level of environmental damage that society is willing to tolerate. This is complex and is of course a central role of government and the Environment Agency.

The Environment Agency already has in place mechanisms for reducing the level of licensed abstractions.

These are administrative and involve:

- **the Environment Agency working with users in over-abstracted catchments (identified through the Catchment Abstraction Management Strategies (CAMS) programme) to identify and agree appropriate changes to specific licences. These are currently being progressed under the Restoring Sustainable Abstractions programme and the National Environment Programme (NEP);**
- **reducing licensed quantities at the point of trade (see figure 3); and**
- **moving towards more time-limited licences, which enables licences to be reassessed at the point of renewal. Since the introduction of the 2003 Water Act, all new licences have been time-limited.**

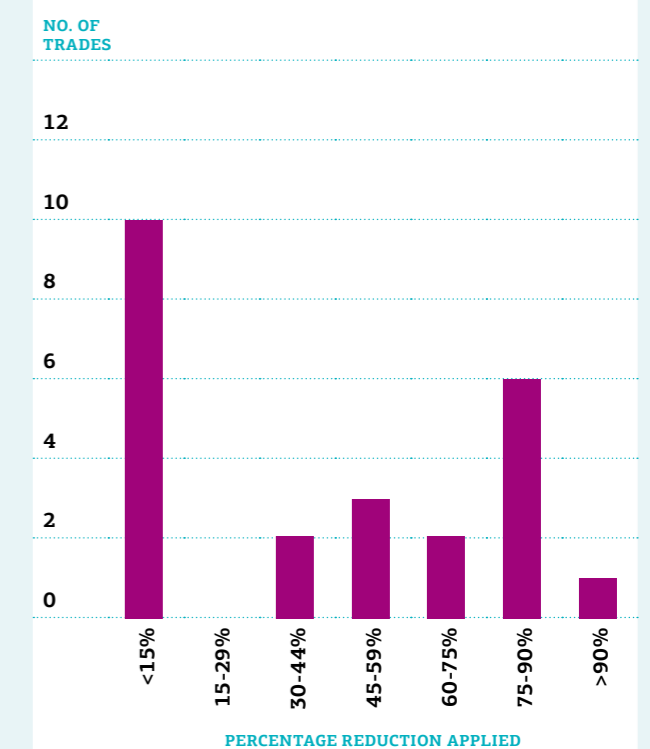
These approaches are clearly aimed at protecting the environment. However, they do not adequately consider the other objectives of a sustainable water allocation regime. In particular:

- **water does not stay with the highest value users in order to ensure water is used to generate the most value;**
- **reducing licences at the point of trade creates uncertainty as to whether the trade will be successful and on what terms. This will act as a barrier to trade and therefore discourage water moving to higher-value uses;**
- **reductions in water supply companies' licences may not be achieved in the most cost-effective way so that the cost of supplying water to the public is minimised; and**
- **users lack certainty and security over their rights, both of which are necessary to incentivise investment and therefore improve the efficiency of water use over time.**

There would be benefit from reforms that address these issues. These benefits would increase if water scarcity becomes more severe in the future.

The Environment Agency can apply reductions to licensed quantities as a condition of approving trades. One rationale for this is that the seller of the licence has not been making use of this water, although, some reductions could relate to a change in use. The reductions can be very large, relative to the licence.

**Figure 3**  
Range of reductions applied to traded licensed volumes



Source: EA registered water rights trades between July 2003 and August 2008.  
Notes: This chart excludes trades where data was missing and where there was a change in use associated with the trade.

## The current approach may become increasingly ineffective

Under current arrangements any future decline in water availability would lead to licences with existing restriction (flow/level etc.) being constrained more frequently and/or future CAMS assessments identifying more licences as being a risk to the environment. As a result, the regime will become increasingly difficult to operate. An administrative arrangement may be suitable where licence reductions are rare or relate to specific sites (such that they only involved one or two licences). However, any administrative approach may become less suitable to address a larger problem of over-abstraction where many more licences could be considered to contribute to the problem.

Uncertainty around the severity of any decline in water availability will also undermine any administrative approach. In these circumstances, market-based approaches, which are inherently more flexible, will adapt to changing circumstances, making them better than administrative solutions. While more flexible administrative systems could be envisaged, in general these would tend to lack transparency, as the administrator will find it difficult to continually justify any change in stance.

This suggests that reform should enable a progressive transition towards a more market-based approach to adapting abstraction licence volumes, driven by the extent to which greater scarcity emerges.

## Getting the maximum value from scarce water resources

An increase in water scarcity raises the importance of enabling water to be reallocated between users to those who value it most. In the absence of a mechanism for doing this, economic activity will be constrained by significantly raising the cost of securing supplies. The importance of addressing this will depend on the extent of water scarcity.

While there are other options for effecting reallocation, trading is the most appropriate and beneficial mechanism. It is already possible to trade water and water rights, although to date the market has been limited, which has led regulators to express concerns about existing processes.

The appropriate reforms to the existing processes, and the pace of reforms, depend on the potential scale of trading markets. If the market, and hence the potential scope for trade, is limited, then there may be little value from a radical overhaul of existing arrangements. This leads to two related questions. First, what scope is there likely to be for beneficial trade? Second, is trade being restricted by regulatory or other barriers?

The scope for greater trading of water or water rights is hard to gauge, based on the evidence available.

To date, scarcity has not been a major issue and so we would not necessarily expect to have seen large volumes of trade.

The type of use appears to be important, particularly agricultural use, which is dominant in countries where large-scale trading has emerged. Agricultural usage represents a relatively minor proportion of use in England and Wales. It is therefore questionable whether trading in England and Wales will become as significant as in other countries with large water markets such as Australia, the US and Chile.

Catchment size and interconnectedness is also a factor. In the UK, trades between different users may be limited because we have relatively small catchments, which are not well interconnected or which could only be connected at high cost. Ofwat has suggested that there are likely to be benefits from inter-regional trade between supply companies. However, the evidence from East Anglia suggests that these benefits may be limited, in the immediate future, by the cost of interconnection, which makes many of these options uneconomic.

### Case study

The potential for trade between different types of users in East Anglia

There are few reliable estimates of values placed on water by different types of user. What evidence exists, suggests substantial differences. This would imply there is at least some prospect for users to make gains from trade.

Whether or not this results in trade, depends on whether different types of users are in a position to trade with one another. Over 65 per cent of the Environment Agency's resource units (management areas that are typically subcatchments) in East Anglia include at least two different types of water users (horizontal axis). This suggests there may be some scope for trade between users within areas of East Anglia. However, trade might be constrained by the limited number of potential market participants in some areas as indicated by the number of licences within each subcatchment (vertical axis). There are many subcatchments with 20 or fewer licences. That said, if interconnection costs are low, the scope for trading may be significantly greater.

It is worth noting that agriculture is relatively more important in East Anglia than in other regions. However, elsewhere, industry is a more significant abstractor.

Figure 4  
Distribution of licences by number of users' types within a resource unit



Source: Analysis of EA NALD data for East Anglia.

With some potential scope for trade, it is possible that trading might increase if action is taken to eliminate any administrative barriers that could otherwise be constraining market developments. These barriers have been identified in work done by the Environment Agency, Ofwat and Defra:

- **The lack of a visible market — Current arrangements make it difficult for users to identify potential trading partners and opportunities. They also face difficulties in estimating the benefit they may get from an exchange, given there are no visible price signals.**
- **High and uncertain transaction costs and approval processes — The current trade approval process imposes significant transaction costs on users, which may deter some trades from taking place. The current trade approval process is also slow by international standards and quoted time frames for the application process in England and Wales range from 6 to 18 months. Uncertainty around**

**the approval process and how this will affect any licence put up for trade also discourages sellers from coming forward.**

- **Disincentives within the regulatory regime — The regulatory regime acts as a barrier to water transfers involving supply companies. This arises because of the disincentives created by the regulatory treatment of any sales revenues and purchase expenses, and the perceived capital bias within the regulatory regime.**

Given the uncertainty around the benefits from trade (particularly in the absence of greater scarcity), reforms should focus on addressing barriers to trade where it is relatively straightforward and low cost to do so.

Focusing reforms first on these identified barriers to trade will enable additional evidence on the scope for trading to be revealed by allowing markets to develop where it is appropriate. Reforms focused on trading barriers are likely to present fewer risks of unintended consequences and are therefore more likely to be of net benefit.

# What can be done to change the level of licensed abstractions?

Other countries have already had to address issues of over-abstraction. Our review of international experiences in Australia, the western US, Chile, South Africa, Spain and France suggests there are four broad options for reducing the level of licensed abstractions (see figure 5).

We assessed the suitability of these reforms by considering whether they were effective:

- in meeting the proposed objectives for the regime; and
- against a broader set of criteria — relating to the principles for best-practice regulation (proportionality, transparency, accountability); the feasibility of reforms; and consistency with the wider objectives of regulators and government.

In assessing these reforms we have been mindful of the uncertainty surrounding both the scale of any future reductions in licence abstractions and also the development of trading markets.

Our analysis suggests that scarcity charges should not be used as the primary means for addressing over-abstraction. It also suggests that the effectiveness of the other approaches varies, depending on the context in which they are used. This includes whether there is a functional water market and the future severity of any sustainability reductions (see figure 6).

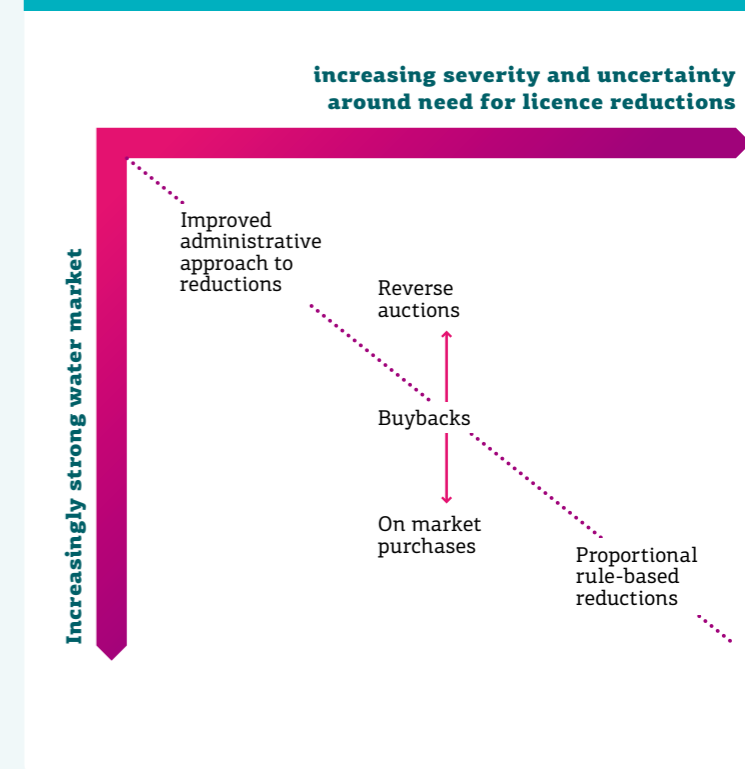
Uncertainty around the need for licence reductions, based on uncertainty around the impact of climate change, leads us to suggest that reforms should be incremental and evolve as uncertainties are resolved. In particular, we consider the following reforms will create a regime that is more adaptable to future needs.

- Reforms to improve current administrative approaches to reducing licence abstractions, can and should be implemented reasonably quickly.
- If water scarcity becomes more severe, more flexible market-based approaches will become more appropriate, in particular government buybacks through reverse auctions. This approach should be piloted now in order to assess its effectiveness. If this approach proves effective, some of the reforms to improve current administrative approaches would be unnecessary.
- Proportional reductions could be appropriate if a stronger water market develops and the problem of over-abstraction becomes more severe.

**Figure 5**  
Broad options for reforms to address over-abstraction

	DESCRIPTION	ASSESSMENT AGAINST OBJECTIVES	OTHER CRITERIA
<b>Administrative reductions</b>	Particular abstractors (possibly based on an assessment of relative water valuations) are targeted and their rights reduced	Generally less efficient but extent depends on: <ul style="list-style-type: none"> <li>• ability to target low-value users</li> <li>• level of certainty users have over their rights</li> </ul>	<ul style="list-style-type: none"> <li>• basis of current arrangements</li> <li>• less proportionate if need for reductions increases as becomes costly and less timely</li> <li>• lacks transparency</li> </ul>
<b>Buybacks/reverse auctions</b>	Government buys back water by entering the water market or by asking holders to tender water rights for sale (reverse auctions)	<ul style="list-style-type: none"> <li>• more efficient means of reducing abstractions incentivises low-value users to sell their rights</li> <li>• improves certainty of rights and puts a value on rights that will increase efficiency over time</li> </ul>	<ul style="list-style-type: none"> <li>• less proportionate if limited need for reductions as may have higher implementation costs (but can pilot)</li> <li>• more adaptable, transparent and accountable</li> <li>• may require legislative change</li> <li>• revenue implications unless funded through abstraction charge</li> </ul>
<b>Proportional reductions</b>	Reductions made to all rights in proportion to each holders relative, implicit share of the resource	<ul style="list-style-type: none"> <li>• can be used as a short-term measure in droughts to improve protection for the environment</li> <li>• does not take water back from lower-value users. Rely on the water market to achieve an efficient allocation</li> <li>• low policy uncertainty, which will increase efficiency over time</li> </ul>	<ul style="list-style-type: none"> <li>• transparent and accountable</li> <li>• highly adaptable to changing circumstance so more proportionate if reductions become more severe and/or less certain</li> <li>• would require legislative change in order to be used effectively and consistently</li> </ul>
<b>Charges</b>	The abstraction charge is set at a level that brings abstraction back to a sustainable level rather than on an administrative basis	Assuming it is estimated appropriately: <ul style="list-style-type: none"> <li>• it will be more efficient than a current approach</li> <li>• set a price for water and so encourage investment and improve efficiency over time</li> </ul>	<ul style="list-style-type: none"> <li>• less proportionate if there is limited need for reductions as it may have higher implementation costs</li> <li>• prone to error and not adaptable</li> <li>• revenue raising but lacks transparency unless collected for funding buybacks</li> </ul>

**Figure 6**  
Effectiveness of various reforms in addressing over-abstraction in different contexts



Emperor Dragonfly



## Current administrative approaches should be improved

We consider that current administrative approaches to reducing licence abstractions could be improved by ensuring water is efficiently allocated.

The following recommendation is aimed at ensuring any future reductions, identified as part of a catchment-wide assessment process, are targeted at low-value users. This will help to ensure water is efficiently allocated.

### Build an understanding of users' water valuations

2. To better understand the costs of alternative reduction options the Environment Agency should build up an understanding of users' relative water valuations. This should identify the opportunity costs (or lost benefits) users face when their water rights are reduced. This can then be used to inform any future assessment process, which should consider these costs when assessing alternative options. This would also aid in estimating compensation payments and provide useful evidence in any government buyback process. Finally, it could help in modelling the scope for trade between users. We understand that Defra has already commissioned research along these lines.

Given the constraints on the Environment Agency's ability to more generally reduce licensed abstractions, making a reduction at the point of trade may be a pragmatic approach. However, this approach runs counter to the proposed objectives for the regime and should therefore be avoided.

### Remove clawback at point of trade

3. The licensed volume of water rights should no longer be reduced at the point of trade; or on the basis of abstraction history in order to address over-abstraction more generally. This approach acts as a barrier to the trade of water rights. Other more systematic catchment-wide approaches should be used for reducing licensed abstractions.

To ensure any reductions targeted at water supply companies are managed in the most cost-effective way, the CAMS process should be better aligned with the regulatory regime. This involves:

- better aligning the timelines of the regulatory cycle and any future licence reduction process to reduce the uncertainty facing companies; and
- providing greater clarity around the anticipated size of any future reductions in licensed abstractions to ensure companies invest in the most cost-effective solutions in the long run.

### Improve alignment with the regulatory regime

4. The catchment-wide assessment process should take into consideration the regulatory cycle when developing the timelines for any reduction in a water supply company's licensed abstractions.
5. A central case scenario for long-term licence reductions should be identified as part of the Water Resource Management Planning process. This can help assess the appropriate investments to deal with longer-term reductions. Where this process suggests a different investment programme, Ofwat should give consideration to this.

Giving users (including those with time-limited rights) greater certainty over their water rights will encourage investment and lead to improvements in the efficiency of water use over time. Secure rights are also essential for facilitating trade in these rights. Users currently have very little certainty around how the Environment Agency intends to address unsustainable levels of abstraction in the future. This could be improved by setting out in advance the terms for any future revision of rights. This enables rights holders to clarify their supply risk. The reforms below may require some legislative change, which would strengthen the water allocation regime for the future.



## Use statutory instruments to increase certainty of rights

6. The terms and conditions for varying any existing rights to address concerns around over-abstraction should be clearly specified, *ex ante*, in a statutory instrument. These terms and conditions should include:
  - a. the specific circumstances and processes under which the volume can be reduced;
  - b. the circumstances and processes under which other conditions may be varied; and
  - c. any circumstances in which compensation will be payable and the details of these arrangements – i.e. the timelines, processes and method for estimation.
7. In order to increase the security for time limited rights holders, the automatic presumption of renewal for these rights should be specified within a statutory instrument. Instead of defining the circumstances where the Environment Agency would normally expect to renew the licence, the circumstances whereby the Environment Agency may not renew the licence should be explicitly defined.

Compensation can provide greater certainty to users by providing protection against the financial impact of policy changes that affect the rights. It can also help reveal low-value users as they may choose to identify themselves if compensation is on offer. This could improve the efficiency of current processes for addressing over-abstraction.

Ideally, one compensation scheme would exist which would better enable the costs of different options for reducing rights to be compared. However, for pragmatic reasons, we are proposing separate compensation schemes for water supply companies and other users.

The existing regulatory regime is well established and understood by water companies; therefore, compensating companies via this process is likely to be simpler and more transparent than overlaying an additional process for doing this. Consumers would then pay for any increase in alternative supply/demand costs associated with a reduction in a company's abstraction licence. This would not create major distortions, provided:

- **water companies do not contribute to the Environmental Improvement Unit Charge (EIUC) used to fund the compensation regime for other users. Otherwise consumers would be overpaying for the cost of reducing abstraction levels; and**
- **a compensation scheme exists for other users. Otherwise this could distort the Environment Agency's decision-making processes as they may favour taking water back from water supply companies, even if this is not warranted.**

## Commit to compensation

8. Water companies should continue to be funded for any investment necessary to manage a reduction in their licensed abstractions through the regulatory process. An explicit commitment to this approach would reduce the regulatory risk faced by water supply companies.
9. A compensation scheme, for rights holders other than water supply companies, should be in place in order to limit the impact of any remaining policy uncertainty associated with future reductions in licensed abstractions. This should involve clearly defining the process and how the risk of any future reductions in water availability will be shared between governments and users.

## Could reverse auctions be more successful?

A reverse auction process (that involves the government buying back water rights from users who offer these for sale at the lowest price) is likely to be more effective if scarcity increases the need to reduce licensed abstractions. This approach leads users to reveal their water valuations and ensures that water rights are recovered from users that value water least. This results in a more economically efficient outcome and provides users with more certainty.

However, this approach has some potential drawbacks. Most particularly, unless it was funded through an increase in abstraction charges, it would have a cost for government. If funded through high abstraction charges these charges may ultimately encourage low-value users to reduce their abstractions or release their water rights, leading to further improvements in efficiency over time.

## Pilot reverse auctions

10. Given there is some uncertainty around the effectiveness of a reverse auction approach in the England and Wales context, we recommend that the government develop and pilot a reverse auction process in a currently over-abstracted catchment. This would be as an alternative to its current administrative process. A pilot would be more easily implemented when a compensation scheme is in place.
11. If the pilot scheme is effective, this should be rolled out more broadly and used as an alternative to administrative reductions. This should be integrated with the existing CAMS process.

## How effective are proportional reductions?

Proportional reductions involve reducing the water rights of all users in proportion to their relative share of a water resource. Without a well-functioning water market, high-value users, who are unable to reduce demand or mitigate the risk associated with variable supply, cannot easily purchase water from a low-value seller. This makes it difficult to achieve an efficient allocation of water between users. As a result, proportional reductions are not recommended unless a stronger water market develops.

## Scarcity charges are not effective

Estimating a charge for water that reduces abstraction to a set level is complex, burdensome, lacking in transparency and prone to error.

The impact of the charge will be uncertain and this will place risk on the environment and on water users. Set the charge too high and this would lead to an excessive reduction in economic activity in the area. Set it too low and the environment's needs would not be fully met.

Ultimately, users' response to higher abstraction charges will vary over time. For example, for power generation and agricultural users it may in part depend on the value of the output being produced and this varies season by season and year by year. This makes it even harder to predict the impact of scarcity charges on abstraction volumes.

Therefore, to be effective, a scarcity charge would need to be continually reset. This undermines the rights of the water users, since they cannot predict the charges that would correspond to their entitlements. This would discourage investment and increase perceptions of risk.

Therefore, we do not recommend using scarcity charges as a primary means for reducing abstraction levels.

## What can be done to facilitate greater trade or reallocation of water between users?

Given the uncertainty around the scope for, and benefits from, greater trade, our reform proposals involve reducing this uncertainty and addressing barriers to trade where it is relatively straightforward and low cost to do so. Our recommendations follow.

Hydro-economic modelling can be a useful tool in assessing the scope for trade. It can also help guide policy development by clarifying the impacts of policy options. It is best used to complement pilot exercises and could build on ongoing work to understand demand and supply characteristics in water using sectors.

### Build modelling capacity

**12.** Options for modelling the scope for trade as an input into the reform process should be considered, taking account of upcoming work on users' supply and demand curves.

Where users are better able to identify potential trading partners, and estimate the benefit they may get from an exchange, trading may increase. This leads us to recommend the following.

### Increase market visibility

**13.** Options should be explored by the Environment Agency for developing an online platform for publishing buy and sell offers. We do not recommend a brokerage service.

**14.** Approaches for ensuring greater consistency in the data and cost estimates used in preparing Water Resource Management Plans (WRMPs) should be explored. This would aid companies in identifying transfer opportunities through existing approaches for working with each other and the Environment Agency.

**15.** Options should be explored for publishing pricing information where a transfer occurs. This may need to be at a regional level, so that trades can be kept adequately anonymous.

The current trade approval process should be streamlined. This would reduce transaction costs for abstractors by reducing the time and uncertainty associated with the current process. It would also reduce the Environment Agency's ongoing costs associated with approving trade.

### Streamline the approval process

**16.** The complexity of the approval process should vary, depending on the nature of the transaction, for example a simplified process if there is no change of use of the abstraction point. The process should be clear and explicit.

**17.** Generic *ex ante* trading rules should be developed which identify upfront types of trades that could negatively impact on other users and the environment. These should also identify the specific terms and conditions that would be applied to these trades in order to protect third parties while reducing uncertainty for buyers and sellers.

**18.** A pilot exercise should be introduced to test the effectiveness and suitability of a streamlined approval process and more specific *ex ante* trading rules for an individual catchment. This would enable the costs incurred to be compared to any benefits in terms of increased trading volumes.

## What trading rules might be needed?

Trade can result in a change in use or changes in the flow patterns in rivers or pipe networks. The market can result in inefficient outcomes if the parties involved in a transaction do not face all the costs and benefits associated with their decisions. In the case of water trade, the water rights of other users and the environment may be negatively impacted by certain trades.

For example, issues may arise for both the environment and other users if the water abstraction point changes. Figure 7, below, shows that if a water right is traded upstream from point A to point B this may:

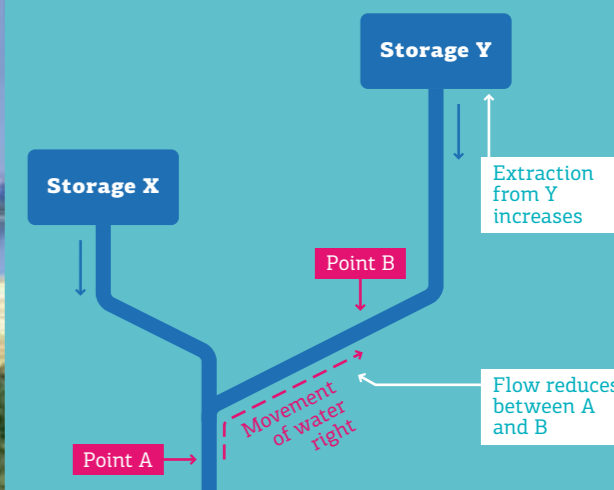
- impact on the environment by reducing the in-stream flow between points A and B; and
- impact on other users by reducing the reliability of all water rights in the river fed by Storage Y as relatively more water is being drawn from Storage Y than before.

Explicit trading rules can be developed for an individual catchment to prevent and redress these impacts. These could specify:

- specific restrictions on certain categories of rights;
- zones within which trade is unconstrained and outside of which further restrictions may apply; and
- exchange rates that are applied to certain trades (where there is a change in the location or conditions) to account for any broader impacts on third parties.

In the example described, the trading rules could specify that upstream trades will be subject to an exchange-rate adjustment of X per cent, which reduces the volume of the water right to account for the negative impact on in-stream flows.

**Figure 7**  
Example of trading impacts



Rutland Water



Water and rights transfers involving supply companies can be encouraged by tackling the disincentives created by the regulatory regime.

Ofwat will need to determine a suitable methodology for the treatment of any gains from trade. Over time, it may also consider whether the structure of regulated charges needs to evolve to ensure that consumers face the appropriate price signals relating to water resource availability. Finally, it could give consideration to whether other regulatory mechanisms are needed, relating to the development of new infrastructure arising in response to trading pressures.

At this stage trade should not be incentivised through additional policy mechanisms including mandating trade that would lead to the inefficient allocation of water.

### Reduce regulatory disincentives to trade

**19.** Barriers to trade within the existing regulatory regime should be addressed. This includes the regulatory treatment of any sales revenues and purchase costs. The structure of regulatory incentives should be flexed in order to generate revenue benefits for both the buyer and seller in order to encourage trades.

The WRMPs of many water supply companies, including Anglian Water, show the need to develop major new resources at the end of the forecast period in order to meet the public's growing demand. It is likely that this may involve the construction of strategic storage and interconnection assets. Such major assets potentially enable substantial benefits, both in terms of security of water resources for public supply and to support economic growth, and in securing the future of our water environment. They may also enable markets to expand by introducing greater storage capacity and increasing interconnections in the system.

Market forces can clearly play a substantial role in the development of this strategic infrastructure, but there is a very big question as to whether the market alone will be enough to facilitate such investment. Such strategic assets can raise many complex social, environmental, political and economic issues, which create heightened uncertainty around whether any investment will be recoverable. This is because they typically involve the use of, and interaction with, natural water resources that are managed by government agencies.

In the past the existence of a secure and stable regulatory regime has been essential to encourage such investments. Therefore, it seems likely that some degree of cross-company and government collaboration will be necessary. At present it is questionable as to whether there is sufficient clarity in relation to the roles of government and other parties in planning these investments.

### Clarify the role for high-level strategic planning

**20.** Consideration should be given to developing and introducing collaborative planning arrangements that facilitate greater investment in strategic large-scale interconnection and storage assets. These assets will be required at some stage to meet the public's water supply needs and may facilitate greater inter- and intra-basin transfers. The need for improved strategic planning approaches will become more apparent once the impact of removing the administrative barriers to trade has been observed.

# Summary of recommendations

Throughout this study, we have explored how we can build a sustainable water allocation regime to meet four key objectives:

- to protect the environment and other in-stream uses;
- ensure affordable and reliable water supplies;
- encourage the efficient allocation and use of water; and
- encourage improvements in the efficiency of water use over time.

Our detailed analysis has led to 20 recommendations designed firstly to improve the processes for reviewing licence abstractions and secondly to remove barriers to trade to help reallocate water and water rights between users.

The two tables below summarise our recommendations for both of these areas and highlight resulting benefits.

**Figure 8**  
Recommendations for improving the processes for reviewing licence abstractions

	RECOMMENDATIONS	BENEFITS
<b>Clarify objectives</b>	<b>1. Develop objectives for the water allocation regime</b>	objectives can be used to assess the need for reforms and to evaluate the success of reforms
<b>Understand users' water valuations</b>	<b>2. Build up understanding of users' relative water valuations</b>	improves ability to target low-value users in making any sustainability reductions. Also informs any compensation payments
<b>Remove clawback at point of trade</b>	<b>3. Remove ability of Environment Agency to claw back licence at point of trade</b>	uncertainty around the trading process may suppress trade. Removing this barrier may create favourable conditions for market development and increase licence trade
<b>Improve alignment with the regulatory regime</b>	<b>4. Align process for reviewing licences with the price review funding cycle</b>	reduces regulatory risk and funding uncertainty. Will also lead to improved coordination between the regulatory and catchment-wide assessment process
	<b>5. Include central estimate of future sustainability reductions in WRMPs. Ofwat to give consideration to this</b>	reduces the risk of inefficient supply/demand investment
<b>Use statutory instruments to increase certainty of rights</b>	<b>6. Terms and conditions for varying licences should be specified up front in a statutory instrument</b>	users become more aware of how they will be affected by any future reductions which will encourage investment
	<b>7. Specify presumption of renewal for time-limited licences in a statutory instrument</b>	users become more certain of renewal, which will encourage investment particularly with long payback periods
<b>Commit to compensation</b>	<b>8. Give explicit commitment that funding to mitigate the impact of sustainability reductions will be made available through the regulatory process</b>	reduces regulatory risk
	<b>9. Extend current compensation arrangements beyond 2012</b>	increases security of water rights and therefore encourage investment and market activity
<b>Pilot reverse auctions</b>	<b>10. Pilot a reverse auction in a currently over-abstracted catchment</b>	helps assess whether or not reverse auctions are a more cost-effective means of reducing over-abstractation. In particular, may help identify barriers to implementation and enable feasibility to be assessed
	<b>11. If successful, use reverse auctions as an alternative to current administrative arrangements for managing over-abstractation</b>	if cost-effective this process will better meet the objectives of the regime and be a more flexible policy for managing over-abstractation than current processes. It will also increase security of water rights, encourage investment and market activity

**Figure 9**  
Recommendations for enabling trade

	RECOMMENDATIONS	BENEFITS
<b>Build modelling capacity</b>	<b>12. Options for modelling the scope for trade should be considered</b>	this will help to quantify the potential scale of water and water rights markets and, therefore, the economic benefits they may bring and the risks and issues they may present to assess benefits in pursuing higher cost options for facilitating greater trade
<b>Increase market visibility</b>	<b>13. Develop online platform for buying and selling of water and water rights</b>	improves the visibility of the market for water and water rights to strengthen market activity
	<b>14. Explore approaches for achieving greater consistency in the data and cost estimates used in preparing WRMPs</b>	
	<b>15. Publish pricing information where a trade occurs</b>	
<b>Streamline the approval process</b>	<b>16. Vary the complexity of the approval process, depending on the nature of the transaction</b>	reduces the complexity and uncertainty of current trade approval processes to strengthen market activity
	<b>17. Develop generic ex ante trading rules which identify types of trade that could have negative impacts and the specific terms and conditions that would be applied to these trades</b>	
	<b>18. Pilot simplified process and specific ex ante trading rules</b>	
<b>Reduce regulatory disincentives</b>	<b>19. Address regulatory disincentives to trade associated with treatment of sales revenue and purchase costs</b>	removing the regulatory disincentives for companies to trade should increase the transfers between water companies. This should, in turn, reduce the need for additional resource development and reduce the impacts on customer bills
<b>Effective strategic planning</b>	<b>20. Clarify role for higher level strategic planning</b>	facilitates investment in strategic large-scale interconnection and storage assets

# Implementing our recommendations

Figure 10

## Timeline of reforms

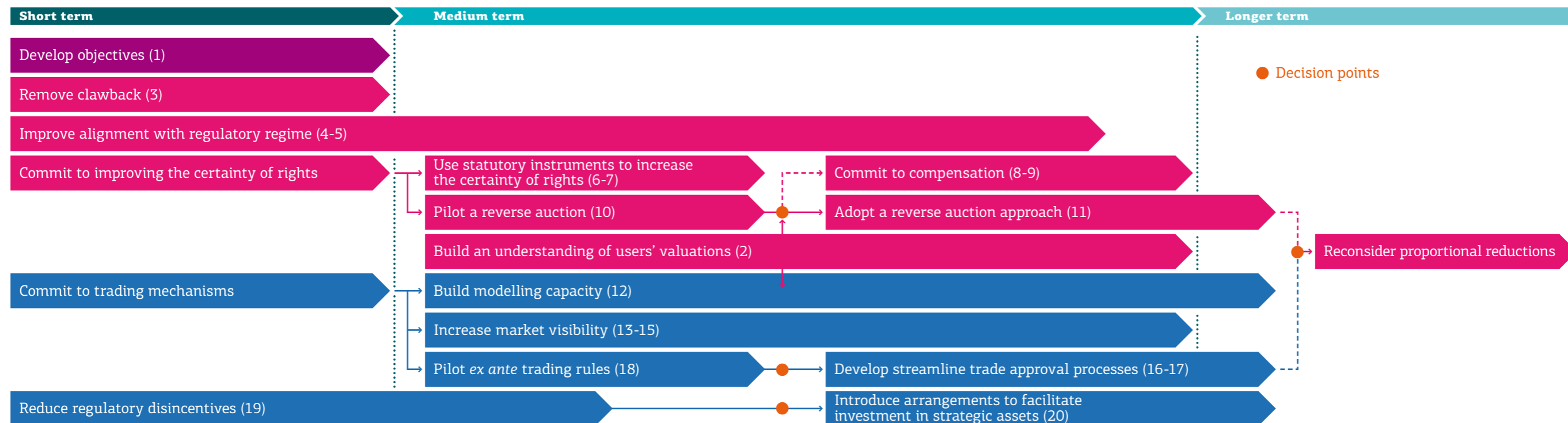


Figure 10 proposes an implementation path for our recommendations. It shows the dependencies between recommendations and gives some indication of appropriate timelines for the intervention proposed.

It identifies a number of priority matters that should be addressed in the short term. In particular, the issues listed below should be considered in Defra's upcoming White Paper:

- **development of a clear set of objectives for the water allocation regime;**
- **removal of any clawback of licences at the point of trade as a mechanism for reducing licensed abstractions;**
- **commitment to a path of reform related to improving the certainty of rights; and**
- **commitment to a path of reform related to improving trading mechanisms.**

In the medium term we consider there are a number of recommendations relevant agencies should be looking to implement.

First, the relevant agencies should deliver on the commitments highlighted above to improve the certainty of rights by:

- **developing the necessary statutory instruments that give rights holders greater certainty;**
- **piloting a reverse auction process while compensation arrangements are still in place; and**
- **based on the outcomes of the pilot, deciding whether to extend compensation or adopt a reverse auction approach to reducing licensed abstractions in the future.**

Second, agencies should deliver on the commitments highlighted above to improve trading outcomes by:

- **building modelling capacity;**
- **implementing reforms aimed at increasing the visibility of the market;**
- **piloting the development of specific ex ante trading rules; and**
- **based on the outcomes of the pilot, determining and then implementing streamline trade approval processes.**

Finally, agencies should look to implement the recommendations associated with:

- **improving the alignment of any licence reduction process with the regulatory regime;**
- **reducing regulatory disincentives to trade; and**

- **assessing whether any new mechanisms are needed to facilitate greater investment in strategic large-scale assets.**

In the longer term an assessment should be made as to whether the need for continuing sustainability reductions has increased, and the water market has sufficiently developed, such that a proportional rule-based reduction approach should be introduced.

There are challenges and complexities associated with the implementation of some of these reforms. The report does not set out how these should be addressed in detail and this would require further work. What the report does provide is a high-level path of action that can be used to help guide policy decisions. This includes identifying where incremental reforms such as piloting may have a role to play in testing the appropriateness of reform options.

## Further reading

For a full detailed report of our recommendations and assessments on 'A right to water? Meeting the challenge of sustainable water allocation', go to [www.anglianwater.co.uk](http://www.anglianwater.co.uk)

### Recent relevant publications from Anglian Water



**Love Every Drop** is a new campaign launched by Anglian Water to help lead the way in raising awareness about the value of water and in changing fundamentally how we all engage with it and use it.

It's a call to action. It's also an invitation for collaboration and partnership to work together to achieve a sustainable future.

Our manifesto sets out what we are doing to **put water at the heart of a whole new way of living**. That means campaigns on water efficiency and reducing the amount we all use, stopping pollution, cutting carbon and eliminating waste. We want to get people thinking and acting as responsibly about water as millions already do about recycling.

Find out more on how we will do this, backed up by our 10 business goals and over 100 commitments, on our website at [www.anglianwater.co.uk/loveeverydrop](http://www.anglianwater.co.uk/loveeverydrop)

Here you can also find other reports we have published to contribute to the debate on market reform in the water industry.



**Trading theory for practice** presents the conclusions of detailed technical analysis undertaken in collaboration between Anglian Water, Essex and Suffolk Water and Cambridge Water Company, to see if water trading can really work.



**Sustainable Water Stewardship: The Next Big Step Forward**  
In November 2010, University of Cambridge Programme for Sustainability Leadership ran a workshop sponsored by Anglian Water to bring together senior policymakers and experts to join up the thinking and seek new solutions to water stewardship. This report is a signpost for future work, summarising the discussions of the workshop and proposed next steps.



Canada (L) and Greylag (R)  
Geese, Rutland Water