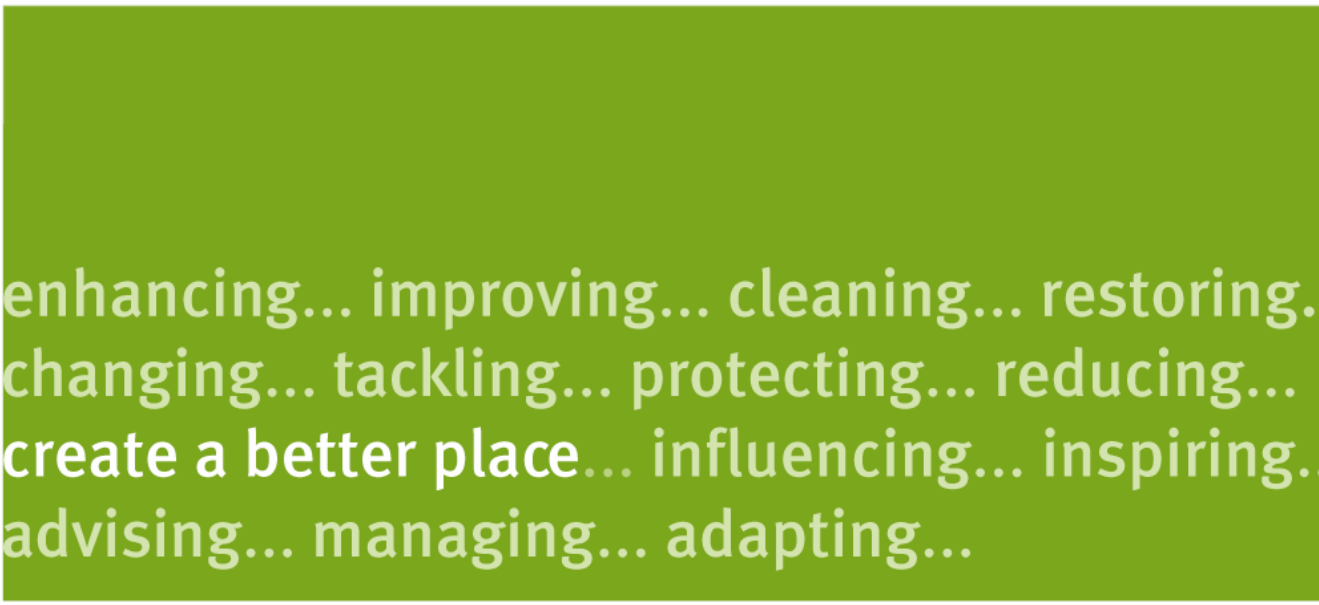

Managing water abstraction

May 2013

We are The Environment Agency. It's our job to look after your environment and make it **a better place** - for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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Foreword

Water is the most essential of our natural resources, and it is our job to ensure that we manage and use it effectively and sustainably. The latest climate change predictions show that pressure on water resources is likely to increase in the future. In light of this, we have to ensure that we continue to maintain and improve sustainable abstraction by balancing the needs of society, the economy and the environment.

We monitor the environment and existing abstraction so we understand the water balance of our catchments and what water may be available for future use through Catchment Abstraction Management Strategies (CAMS). We publish the results in our Abstraction Licensing Strategies.

In this document we explain our approach to managing abstraction and what it means for existing and potential abstractors. This gives the context for our Abstraction Licensing Strategies and links to where you can find out more.

Chris Tuckett Head of Water Resources

Contents

Summary for potential abstractors

The availability of water

We monitor the environment and existing abstractions, and use this information to assess how much water is available for people to take from rivers, groundwater and other sources. This document includes maps of water availability in England and Wales. For more detailed maps for your area you need to identify which catchment you are in and look at the local Licensing Strategy document. These are published alongside this document and can be found on our website.

To take water from rivers, groundwater and other sources, you generally need an abstraction licence and to create or alter an impoundment you need an impoundment licence. There are some circumstances where a licence isn't needed currently. To find out if you need a licence and how to apply, take a look at our Guide to getting your licence and water abstraction webpage.

Water availability maps

In the first set of Catchment Abstraction Management Strategies we only showed water availability at low flows. We have now updated the way we assess water availability to show results at a wider range of flows. We have added maps that indicate how reliable the availability of water is likely to be, and updated the terminology we use. Our goal is to make it easier and quicker for you to see if water might be available in your area and the reliability you may have from a new licence. More information can be found in Section 3.1.1.

Upcoming changes to the current system

In Defra's Water White Paper (Water for Life, Defra 2011) the government has set out a commitment to introducing a reformed abstraction licensing system to ensure that the system is fit for the challenges of the future. Abstraction reform is addressing the potential future problems of changing availability and security of supply as a result of the longer term impacts of climate change, increasing population and an increasing demand for water. More information can be found on our Water White Paper webpage and the Defra website.

Managing water abstraction in Wales

A new organisation, Natural Resources Wales, will become operational on 1 April 2013 and will bring together the functions of the Environment Agency Wales, Countryside Council for Wales, and the Forestry Commission Wales. This body will manage abstraction in Wales.

Where to find out more

This document gives an overview of how we manage water resources in England and Wales and how the strategies and plans that relate to water resources fit together. Throughout the document you will find hyperlinks to webpages and other useful documents. You can also call us on 03708 506 506 (calls cost no more than a national rate call to an 01 or 02 number) or email us enquiries@environment-agency.gov.uk.

1 Introduction

Water is essential for human life and to sustain a diverse, thriving aquatic environment. It is also an important economic driver as an essential requirement for industry, power generation, commerce and agriculture.

This new edition of **Managing Water Abstraction** (2013) sets out how we manage water resources in England and Wales. It is the overarching document that links together our abstraction licensing strategies.

Water Resources is the term we use to refer to the quantity of water available for people and the environment. Abstraction is the removal of that water, permanently or temporarily, from rivers, lakes, canals, reservoirs or from underground strata. We need to make sure that abstraction is sustainable and does not damage the environment. We control how much, where and when water is abstracted through our licensing system. This system was introduced by the Water Resources Act 1963 and has been refined and changed as a result of the Water Resources Act 1991 and the Water Act 2003.

Our powers and duties enable us to regulate the use of water under existing licences and to decide whether to grant new ones. Where abstraction is damaging the environment we also have the power to amend or revoke existing licences.

The availability of water resources for abstraction is assessed through our Catchment Abstraction Management Strategy (CAMS) approach. This determines how much water is reliably available for abstraction on a catchment by catchment basis. By taking into account the amount of water already licensed for abstraction and how much water the environment needs, we can determine how much water is potentially available for further abstraction.

We started CAMS in 2001. Our current approach builds on the improved knowledge we gained through the first set of CAMS and is an integral part of the Water Framework Directive's River Basin Management Planning. We still assess what water is available and we now publish more concise Abstraction Licensing Strategies. These strategies are reviewed and updated when required. The first set of these new-look strategies are being published alongside this document.

A key part of our first CAMS was the stakeholder engagement that took place in each area. This was fundamental in shaping our approach to managing abstraction and is a building block of the new licensing strategies. Stakeholder engagement is still very important and is now done through the River Basin Management Planning process.

2 Water resources strategies and plans

Managing water resources requires a co-ordinated approach by government, water companies and the Environment Agency. There are a number of different plans and strategies that help us to balance the needs of people, the economy and the environment. Each covers different aspects of managing water and they fit together to form the system we have today.

This section outlines the main plans and strategies in turn, separated into those driven by government, water companies and the Environment Agency. Section 3 onwards outlines how these plans and strategies are put into practice to manage abstraction.

2.1 Government strategies

In 2006, the Welsh Assembly Government produced the Environment Strategy for Wales, and in 2008, Defra published Future Water: The Government's Water Strategy for England. Together they set out the broad strategic direction and form the current policy framework for water management in England and Wales.

Defra published a Water White Paper in 2011. It focused on the future challenges facing the water sector, including maintaining water supplies for people, agriculture and business, keeping bills affordable and how government can reduce regulation. It also recognises the need to protect our water environment from pollution and unsustainable abstraction, and acknowledges the critical importance of water supply and sewerage infrastructure.

We have provided evidence to Defra to support the Water White Paper two documents known as the Case for change which set out our information on current and future water availability and the case for abstraction reform.

2.2 Environment Agency strategies and plans

We published our Corporate Strategy 2010-2015: Creating a better place, outlining our vision for the environment. It includes a summary of outcomes we will use to measure our success at managing the water environment.

2.2.1 Water Resources Strategies

Our water resources strategies, Water for People and the Environment: Strategy for England and Wales and Strategy for Wales, provide a consistent framework for water resources management across England and Wales and set out how we believe water resources should be managed beyond 2050. The strategies explain how we will work with many organisations to put in to practice actions that will:

- raise awareness of the value of water
- manage water resources to better adapt to climate change
- make water use more effective
- promote incentives to reduce demand
- promote sustainable planning.

2.2.2 Water Resources in England and Wales – current and future pressures report

The current version of the report Water Resources in England and Wales puts the current and future pressures on water resources into context, it will be updated in 2013. It includes detailed information on:

- how water availability changes from place to place
- water use, including information on the abstraction of water
- public water supply, leakage and household metering

- future pressures and trends, such as climate change and population growth.

The report uses information from a variety of initiatives, including CAMS and water company's Water Resource Management Plans (WRMPs) to assess the possible impacts of climate change.

2.2.3 Water Resources Strategy Regional Action Plans (RAPs)

National actions and principles contained in the Corporate Strategy translate into local activities. Water resources strategy Regional Action Plans (RAPs) report how these actions will be carried out at a local level up to 2015. RAPs also include water resources elements such as drought management. Initiatives such as CAMS and Restoring Sustainable Abstraction (RSA) will provide a mechanism for delivery of actions contained in the plans.

2.2.4 River Basin Management Plans (RBMPs)

The European Water Framework Directive (WFD) requires us to produce River Basin Management Plans for each of the 11 River Basin Districts in England and Wales. These plans set out the actions, known as the 'programme of measures', that are necessary to ensure that inland and coastal waters achieve WFD 'good ecological status or potential' status (or an alternative objective) and that there is no deterioration from their current status. The first River Basin Management Plans were published in 2009.

Abstraction licensing is one of several mechanisms in place to support River Basin Planning objectives. Other mechanisms include those to control diffuse and point source pollution, and to manage physical alterations to watercourses.

2.2.5 Catchment Abstraction Management Strategies (CAMS)

CAMS is the approach we use to assess the amount of water available for further abstraction licensing, taking into account what the environment needs. There is more information on how we do this in Section 3.

2.2.6 National Environment Programme (NEP)

The NEP is a programme of investigations and actions for environmental improvement schemes that ensures that water companies meet European Directives, national targets and their statutory environmental obligations. We provide a list of investigations and solutions for the NEP after consultation with the water industry and a number of other organisations.

The NEP forms part of the final Asset Management Plan (AMP) that determines the overall level of investment that water companies need to make over a five year period, based on the new price set by the Water Services Regulation Authority (known as Ofwat). Companies incorporate these requirements into their proposed business plans, which inform Ofwat's decision on price limits.

2.2.7 Restoring Sustainable Abstraction (RSA)

Where abstractions are unsustainable we investigate the causes and implement measures to restore sustainable abstraction. This could include changing abstraction licences or other actions to reduce the impact on the environment. Like the NEP there are three stages looked at to deliver the environmental solutions needed, These are Investigation, Options Appraisal and Implementation. This work is often done through the NEP for water company abstractions, and by us for other abstractions. See Section 6, Environmental restoration for further information.

2.2.8 Environment Agency drought plans

We produce Drought plans which set out how we plan for, and manage a drought. They range from high-level plans where we co-ordinate our drought management activities throughout England and Wales to local level plans where we outline specific operational activities. Our plans are reviewed annually and updated when appropriate. We have reviewed the 2012 drought and identified lessons learnt in our drought prospects report.

2.3 Water company plans

Water companies have a statutory duty to produce both Water Resources Business Plans (WRBPs) and Water Resources Management Plans (WRMPs). The first relates to how they manage their business and the level of customers bills and the second to how they manage water.

2.3.1 Water company water resources business plans (WRBPs)

Water companies submit business plans to Ofwat, who regulate the price customers pay for the supply of water and the treatment of wastewater. Ofwat reviews Water Company pricing in a five-yearly process known as the Periodic Review. The latest Periodic Review, PR09, was completed in November 2009. This sets the price limits for the period 2010 to 2015. Water companies are now working on PR14 which will set prices for 2015 to 2020. Water companies prepare their final business plans using the advice and comments from Ofwat, ourselves, other organisations and the public. We use the consultation period to check that these plans are consistent with WRMPs.

2.3.2 Water company water resources management plans (WRMPs)

These plans show how water companies are going to manage the supply and demand for water over a 25-year period. From 2009 they've had to publish and consult on their draft WRMPs which will be kept under yearly review and revised every five years. Ofwat use the Management Plans to assess the companies' supply-demand balance and the work they need to undertake as part of the Periodic Review. This information forms the basis for the Water Company Business Plans. Further information on the plans and our role in producing them can be found at WRMPs.

2.3.3 Water company drought plans

Water companies prepare these plans to show the actions they propose to take in order to manage water supplies during drought periods. They prepare them following our guidance, consult on them and then submit them to government. Further information on this process can be found on our webpage for Water Company Drought Plans.

3 Catchment Abstraction Management

Our Catchment Abstraction Management Strategies (CAMS) approach sets out how we will manage water resources within a catchment area. Our aim is to:

- make information on water resource availability and the catchment licensing strategy more readily available
- provide a consistent and structured approach to local water resource management
- recognise both the abstractor's reasonable need for water and environmental needs
- provide mechanisms to assess water resources availability
- provide results which ensure the relevant Water Framework Directive objectives are met
- provide tools to aid licensing decisions – particularly the management of time limited licences.

3.1 The CAMS approach

Between 2001 and 2008 we developed the first CAMS for all major catchments in England and Wales. Through these strategies we made information widely available to the public for the first time on how we manage water resources. Abstractions over 20 cubic metres per day require an abstraction licence (with some exceptions). Whether we grant a licence or not depends on the amount of water available after the needs of the environment and existing abstractors are met and whether the justification for the abstraction is reasonable.

We have completed a review of our licensing strategies. This included reassessing how much water may be abstracted and when. This information underpins our licensing decisions and contributes to delivering the objectives of the River Basin Management Planning. Although the documents produced today are different to the first ones we produced, the overall process still has three main parts, Resource Assessment, Licensing Strategy and Measures Appraisal. outlined below. CAMS focuses on Resource Assessment and developing the Licensing Strategy, and these then inform Measures Appraisal which is done through other mechanisms like the Restoring Sustainable Abstraction.

3.1.1 Resource assessment

We use information from our monitoring network to assess the current and past water and ecological situation. We routinely gather information on rainfall, river level and flows, groundwater levels and ecology. More information on our monitoring activities can be found on our website, along with the latest data from some of our key water flow and level sites. At the start of the resource assessment we calculate a water balance for each CAMS area. The elements of the water balance calculation are river flows, groundwater recharge, abstractions, discharges, and a resource allocation for the environment and any other water uses or features that require protection. We use an 'Environmental flow indictor' (EFI) to assess whether river flows are sufficient to support a healthy ecology. More information on how we use EFIs is given in Appendix 1.

The proportion of time that water is available for new abstraction for England and Wales is shown in Map 3.1. The actual resource availability detailed in our Abstraction Licensing Strategies could be different from this national picture due to the need to manage local features and issues, or account for better, local information. Local water availability may also be affected by other activities and the environment downstream. The resource assessment also helps us understand which parts of our catchments, due to existing abstractions, may not have enough water to support the river ecology. We will carry out further investigation on abstraction licences that may be causing or have the potential to cause environmental damage. If any of these licences are found to be damaging the environment we investigate further and identify options for a solution. We will consider mitigating, varying or revoking these abstraction licences. This process is outlined in more detail in Section 6.

We have updated the process so we can now report the results of the resource assessment at a more local scale based on the water bodies and groundwater bodies we use in River Basin Planning. We use colours known as CAMS resource availability colours to indicate the amount of water available for additional abstraction. Not all abstractors use the full quantity of water they are entitled to, so the flows in recent years may be significantly different to what we would expect if abstractors took their full licensed quantities. To account for this we assess the availability of water by the relationship between the fully licensed and recent actual flows and compare this to the EFI. River flows change naturally throughout the year, so we want to protect flow quantity and variability in our rivers from low to high flow conditions. To achieve this we calculate resource availability at four different flows, low flow (Q95); below moderate flows (Q70); moderate flows (Q50); and higher flows (Q30). We use statistical analysis to make interpretation of long term flow information easier. For example, a low flow is generally accepted to be a flow that is exceeded 95 percent of the time. We call this a Q95 flow. You will see flow presented this way in both this document and our Abstraction Licensing Strategies. Map 3.2 illustrates what this looks like for England and Wales.

CAMS resource availability colour	Implication for licensing
High hydrological regime	There is more water than required to meet the needs of the environment. However, due to the need to maintain the near pristine nature of the water body, further abstraction is severely restricted.
Water available for licensing	There is more water than required to meet the needs of the environment. New licences can be considered depending on local and downstream impacts.
Restricted water available for licensing	Full Licensed flows fall below the EFIs. If all licensed water is abstracted, there will not be enough water left for the needs of the environment. No new consumptive licences would be granted. It may also be appropriate to investigate the possibilities for reducing fully licensed risks. Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder.
Water not available for licensing	Recent actual flows are below the EFI. No further consumptive licences will be granted. Water may be available if you can buy (known as licence trading) the amount equivalent to recently abstracted from an existing licence holder.
Heavily Modified Water Bodies (and /or discharge rich water bodies)	These water bodies have a modified flow that is influenced by reservoir compensation releases or they have flows that are augmented. These are often known as 'regulated rivers'. They may be managed through an operating agreement, often held by a water company. The availability of water is dependent on these operating agreements. There may be water available for abstraction in discharge rich catchments, you need to contact the Environment Agency to find out more.

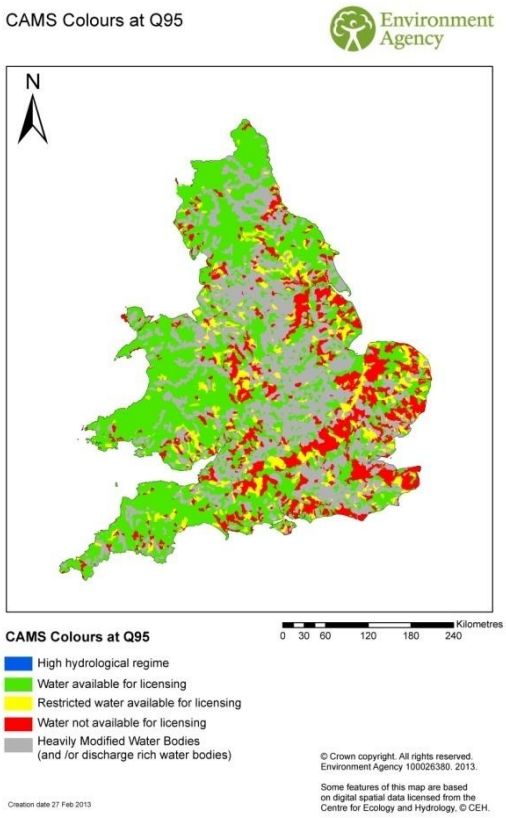
Table 3.1 Water Resource Availability Colours

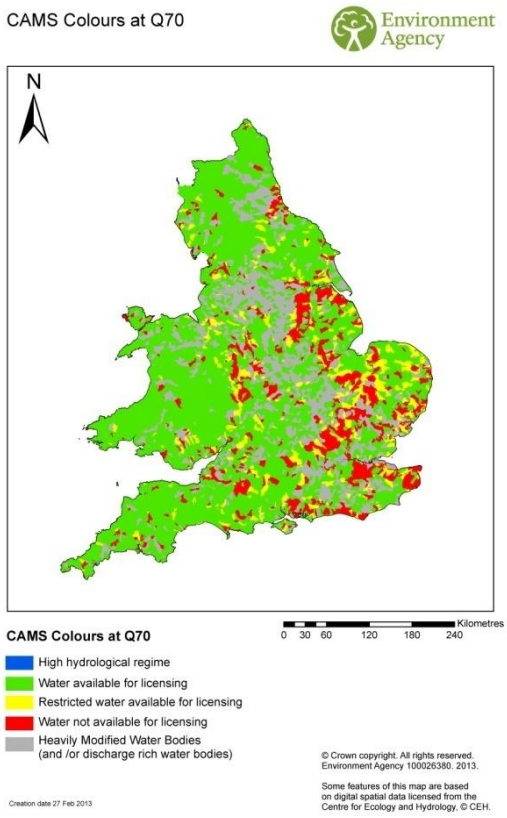
3.1.2 Stage 2: Abstraction Licensing Strategy

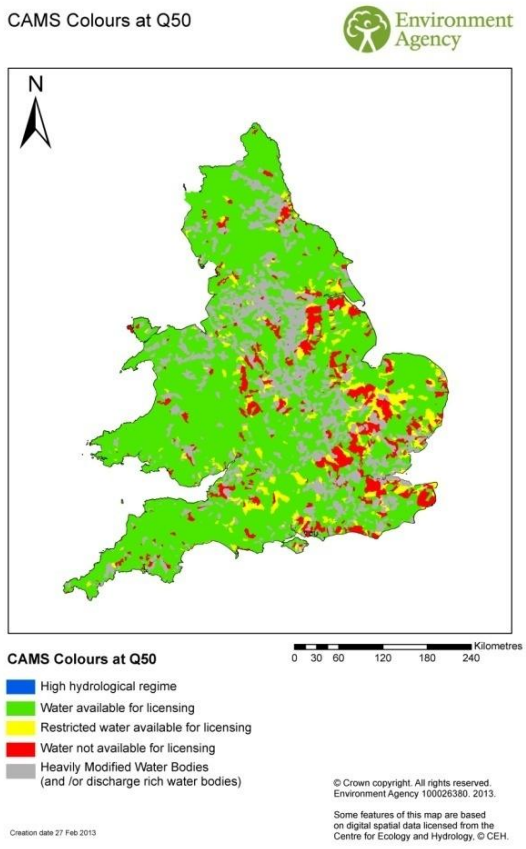
Licensing Strategies set out how we are going to manage abstraction licensing in a particular area. Each Strategy provides information on what resources are available (where and when), what conditions might apply to new licences and whether time limited licences will be replaced with the same conditions. In addition to using this Abstraction Licensing Strategy, we also look at the local impacts of the proposed abstraction or impoundment and ensure that we protect the rights of existing water users, as well as protecting the environment.

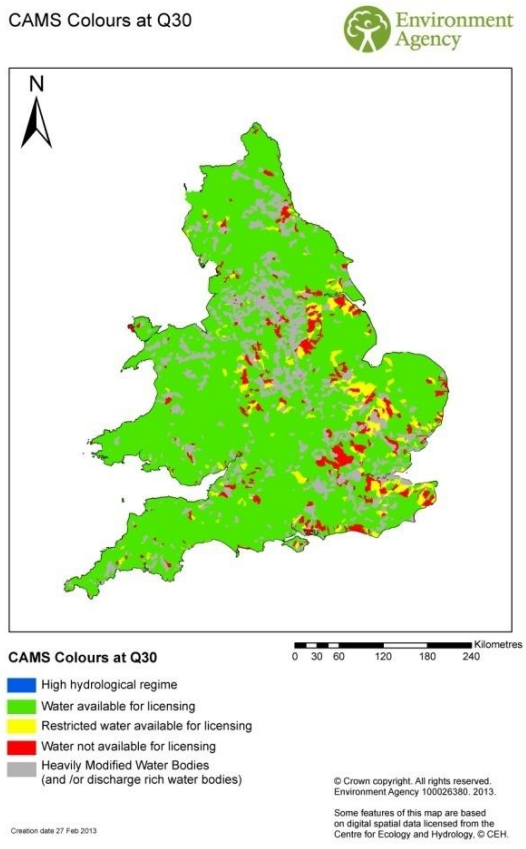
New or varied licences will generally be time-limited and will usually have a Common End Date (CED) specific to the area they are in. This will allow for periodic review and changes to abstractions within an area where circumstances may have changed since licences were granted. Licences where there is a small risk to the environment may still be issued, but for a time period less than the CED, while the impacts are monitored. If certain tests are met we are able to issue long duration licences. These are expected to be relatively few to ensure catchment reviews can address all licences at the CED review to respond to environmental change.

In some cases we have developed site-specific operating rules for managing abstractions. It is also usual for us to put conditions on licences that require abstraction to stop or be reduced when a flow or water level falls below a specified point. These are known as hands off flows (HoF) and hands off levels (HoL) conditions which we set to protect the environment, other water users and local or larger catchment scale features. If you would like to find out more about these conditions, please read the note on our website.









Map 3.2 Abstraction pressures at low flows (Q95) to high flows (Q30). Local resource availability in our licensing strategies could be different from this national picture due to the need to manage local features and issues.

As more of the available water is allocated to abstraction, we will issue licences with increasingly restrictive hands off flow conditions to ensure sufficient water continues to be available for the environment. Through a simple map, CAMS show areas where water availability may be more reliable and therefore available for a greater percentage of the year than other areas. The national picture is shown in Map 3.2, the local picture can be found in the individual Abstraction Licensing Strategies.

3.1.3 Stage 3: Measures appraisal process

Where we identify flows are not supporting a healthy ecology we will investigate ways to remedy this. Taking the catchment-based approach, we look for solutions that take account of other environmental problems in the catchment, for example with water quality. We aim to find the best way forward for the catchment as a whole. In some cases where the cost of a solution is far greater than the benefit it would deliver, alternative, less stringent objectives may be set so that feasible improvements can be made.

The results from this process will feed back into the Licensing Strategy and resource management will reflect the new decisions. This will inform:

- our licence determination and management decisions
- existing abstraction licence holders of the likelihood of licence replacement
- RBMP Programme of Measures.

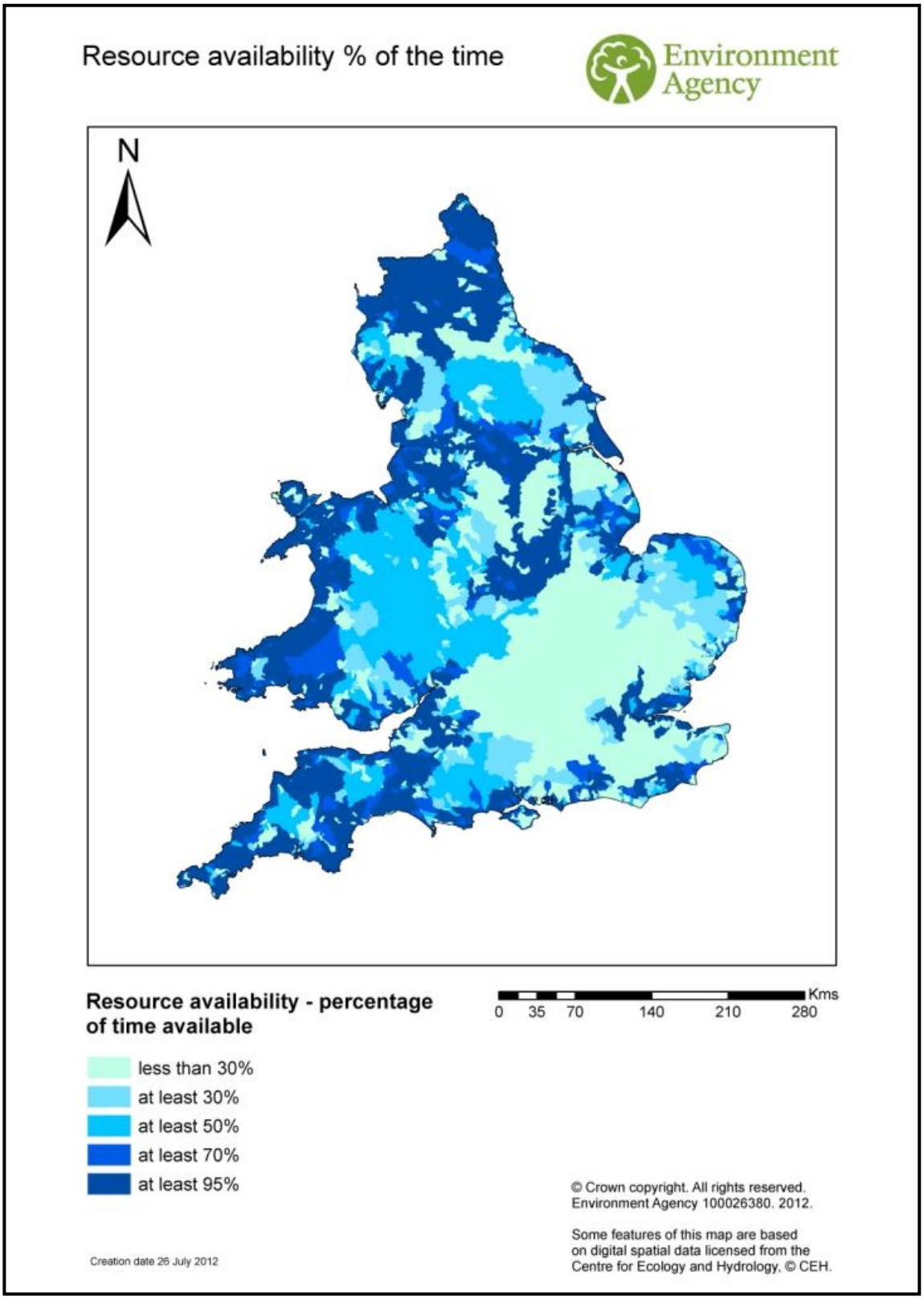
3.2 Water Framework Directive and CAMS

The European Water Framework Directive (WFD) came into force in 2000 and was transposed into UK law in 2003. Its purpose is to enhance the status, and prevent further deterioration, of the ecology of aquatic ecosystems and their associated wetlands and groundwater. WFD requires that inland and coastal waters reach good chemical and ecological status or potential as set out in River Basin Management Plans. WFD also promotes the sustainable use of water and applies to all surface freshwater bodies, groundwater, groundwater dependant ecosystems, transitional waters (estuaries) and coastal waters out to one mile from low-water.

The CAMS process provides information on how much water is available for future licensing and the environment. By using this information to manage our water resources sustainably, CAMS is supporting the objectives of the WFD by:

- providing a resource assessment of rivers, lakes, reservoirs, estuaries and groundwater referred to as water bodies under WFD
- identifying water bodies that are failing, or are at risk of failing to meet good ecological status by 2015 due to water resource pressure
- preventing deterioration of water body status due to new abstractions
- providing results which feed into River Basin Management Plans (RBMPs).

More information on how CAMS supports WFD is included in Appendix 1, along with how we assess the ecological status of a water body and identify actions that need to be taken.



Map 3.2 Resource availability, percentage of the time (2012). The local resource availability detailed in our catchment licensing strategies could be different from this national picture due to the need to manage local features and issues.

4 Managing abstraction and impoundment

4.1 Protected rights and lawful users

We are responsible for managing water abstraction and impoundment in a way which protects the environment and rights of other water users. We do this through the licensing system which is prescribed by legislation.

Water is abstracted from surface water sources and groundwater sources for a range of uses, including agriculture, industry, power generation and public water supply. When we receive an application for a new abstraction or impoundment licence, or to vary an existing licence, we need to assess the likely impacts of the proposal. We have a range of legal duties and obligations to consider or take into account in making our decision. We must consider any adverse effects on the environment and cannot grant licences that would derogate protected water rights. We must also have due regard to certain categories of existing lawful users of water. For more information on how to apply for an abstraction or impoundment licence, please read 'Abstracting water –a guide to getting your licence' which is available on our web site.

4.2 Time limiting of licences

We need to recognise and respond to future uncertainties over water availability caused by climate change and increased demand. In doing this, we must manage the impact of abstraction on the environment and lawful water users. Time limiting of abstraction licences allows us the opportunity to review abstraction in the light of changing pressures.

We time limit all new abstraction licences, and where appropriate, variations to existing licences. We aim to time limit licences within each CAMS to a common end date (CED) for that CAMS area. Most licences will be of 12 years duration. Where an application is made within six years of the CED, we will generally apply the subsequent CED to any licence granted. This is to avoid issuing shorter and shorter duration licences as the CED approaches. This means that the initial CED on a licence may be between six and 18 years duration. If a replacement licence is then applied for, the normal duration will be 12 years. In certain circumstances, we have discretion to apply short or long time limits to a licence and this will be done on a case by case basis, following discussion between the applicant and ourselves and considering the needs of the environment. More information can be found on our website.

We don't time limit impoundment licences, but we do have powers to deal with impounding works that cause problems. We can impose conditions concerned with the removal of an impoundment before the licence is revoked or before an existing unlicensed impoundment is altered or removed. This helps us manage the environmental impact of the impounding works. You can find out more about how to apply for an impoundment licence on our website.

4.2.1 Short duration licences

There are a number of reasons why we would grant a licence for less than 12 years. These include where:

- the proposal is for a shorter period, perhaps because it is tied to a contractual arrangement or other permissions
- the resource is only available for a shorter period, perhaps because a known future reduction in flow is due, for example, closure of a sewage treatment works
- where part of another, under-utilised licence is traded for use for an agreed period
- future plans, for example water level management plans, change the amount of water available for abstraction, or where targets are set in our plans or strategies

- the impact of the abstraction is unclear and a fixed period of monitoring is agreed to enable determination of any longer term licence.

4.2.2 Long duration licences

In exceptional cases we may be able to grant licences of up to 24 years duration. To qualify, the applicant will need to demonstrate through a business case that their proposed abstraction will meet **all** of the following four government requirements stated in *Taking Water Responsibly 1999:*

- the lifetime of the infrastructure is inseparably associated with the licence will extend over the desired period of validity
- there will be a continued need for the service or product associated with the infrastructure throughout the desired period of validity
- a full appraisal of likely changes in environmental and economic circumstances that may have a bearing on the acceptability of the abstraction over the desired period of validity shows no significant concerns
- the infrastructure development contributes to sustainable development.

Holders of a long duration licence will be given the opportunity to apply for a replacement licence mid-way through the duration of their licence (that is, an application can be submitted 12 years after first issue). There is no constraint on the number of times that a long duration licence can be granted provided that the four requirements are met.

4.3 Replacement of time limited licences

Time limiting licences provides the mechanism to review licences in the light of any changed circumstances since they were granted. Time limited licences will be replaced providing:

- the abstraction is environmentally sustainable – our investigations including for RSA and River Basin Management Planning will identify where sustainability may be in question
- there is continued justification of need – the licence holder will need to demonstrate that they still have reasonable need for water, and whether the quantity is still justified
- water is being used efficiently– this means using the right quantity of water in the right place at the right time. We expect abstractors to use water in a responsible and efficient way, and will expect them to provide evidence of this when applying for a replacement licence.

4.3.1 Non-replacement of time limited licences

We expect that **most** applications to replace a time limited licence on the same terms will be granted. When the three tests are not met, a replacement licence may not be granted or may be granted with different conditions. In some circumstances we may identify that abstraction is causing unacceptable damage to the environment, and that more significant action is needed. We will try to give up to six years' notice before the expiry date where we won't be able to replace a licence, or where we will only be able to grant a replacement licence on significantly more restrictive terms.

There may be circumstances which prevent us being able to give this amount of notice, for example where the abstraction is causing unacceptable damage within a site of European importance, designated under the Habitats or Birds Directives, or where insufficient justification of need is provided at the time of application for replacement.

4.3.2 What to do before your licence expires

It is important that abstractors make preparations to replace their licence at least a year before the expiry date if they wish to continue abstracting. Applicants should send us an application to replace their licence at least 3 months before the existing licence is due to expire. If an application is submitted after this time, it is treated as a new licence and there is a risk that we may not be able to issue a licence and the water may be re-allocated. If you would like to find out more about the process, how much it costs or download the application form please visit our website or call us on 0370 8506506.

4.4 Water Rights Trading

Water rights trading are where rights to abstract water are transferred from one person to another. This means the trading of licensed rights only. The transferred rights are usually set out in a new abstraction licence. We are encouraging trading because it allows us to allocate our water resources in a way that meets demand and supports the environment without the abstraction of additional water. We administer the trade and ensure that it is consistent with the Abstraction Licensing Strategy for the area. Find out more in our page on how to trade abstraction licences.

4.5 Environment Agency licences

We undertake a number of activities that involve abstracting or impounding water, such as within our flood risk management role and in improving fish passage. To do this we also need the appropriate licence and the same requirements apply to us as for external applicants when making an application including advertising and providing supporting information.

As we are the licensing authority, it would be inappropriate for us to have a free hand to grant ourselves a licence. We must refer to the Secretary of State (SoS) for the Environment, Food and Rural Affairs or Welsh Ministers (WM) before a licence can be granted, to ensure impartiality. The SoS/WM can decide to 'call in' an application and make a decision on the application themselves. The SoS has the power to refuse an application, grant a licence with the terms applied for or impose different conditions.

4.6 New Authorisations

The Water Act 2003 made some changes to the way we regulate abstraction and impoundment. These changes included removing existing exemptions for particular activities, making these activities liable to abstraction control (if over the $20m^3/d$ exemption threshold).

The abstraction activities for which current exemptions are to be removed include:

- rights of navigation
- irrigation other than spray irrigation purposes
- dewatering
- harbour and conservancy authorities
- rights to abstract for drainage purposes
- repeal of area specific exemption orders
- exemptions relating to the Crown and visiting forces
- exemptions in the Border Rivers between England and Scotland.

Some abstractions currently outside of licence control that would otherwise be brought into the system when we implement the remaining provisions of the Water Act 2003 will be subject to new exemptions. These are only proposed where the type of abstraction has no appreciable impact on the environment and regulatory control is unnecessary to manage water resources. In general, it is proposed that these new exemptions will apply to:

- certain abstractions by ports and harbours
- certain types of dredging operations
- certain abstractions and new impounding works within water meadow systems
- new impounding works constructed by or on behalf of an Internal Drainage Board
- saline abstractions from the Cheshire Brinefields.

To implement these changes, government will have to make appropriate regulations. These will need to be laid before Parliament and the National Assembly for Wales. The timetable for implementation will be determined by government.

4.7 Water used for renewable energy generation

In the UK we need to generate 15% of our energy from a mix of renewable sources by 2020. The demand for renewable energy, especially on a small scale is increasing. A number of these methods of energy generation require abstraction or impounding of water.

4.7.1 Hydropower

There are three main types of hydropower schemes and they all require water:

- Storage schemes - where a dam impounds water in a reservoir that feeds the turbine and generator.
- Pumped storage schemes - which incorporate two reservoirs. At times of low demand, generally at night, electricity is used to pump water from the lower to the upper reservoir. This is released through turbines to generate electricity when demand is high.
- Run of river schemes - these use the natural flow of a river and generator to generate electricity. Some have a turbine and a weir in the river, while others divert water from the river to a remote powerhouse containing the turbine and return the water downstream.

There is a Good Practice Guide available and additional information on our hydropower regulation webpage, these give information on what permissions are required and what steps can be taken to improve sustainability of schemes and protect the environment and other water users.

4.7.2 Ground source heat pumps

Ground source heat and cooling systems use energy stored in the ground to heat and, sometimes, to cool buildings. We regulate open loop systems. They require a Groundwater Investigation Consent and if found to be acceptable, followed by an abstraction licence and an environmental permit to discharge water. Where necessary, to protect the environment, we will set temperature limits on the environmental permit to discharge. These permits and consents allow us to ensure that systems comply with environmental legislation and avoid undesirable environmental impacts. For more information see our ground source heat pump webpages. We also regulate deep geothermal schemes, which are usually several kilometers deep.

4.8 Complying with your licence

Abstractors must comply with any conditions on their licence. A key aspect of managing water resources is checking that licences are complied with by visiting sites of abstraction or impoundment. We have a legal duty to do this. Most licences will require the abstractor to measure the water taken and keep records. We have published two documents that provide more information on how we maintain a level playing field and top tips for complying with your abstraction licence.

We inspect abstractions and impoundments to ensure the operators are keeping to the terms of the licence. We take a risk-based approach to licence inspection. We will decide how often we inspect for compliance by prioritising those licences which are likely to have the most impact on the environment.

4.8.1 Measuring actual abstraction

The most common method to measure actual abstraction is using an abstraction meter. Many licences state that a meter should be used. It is important that meters are installed correctly and maintained by the licence holder, our staff check this when they visit abstraction sites. It is also important that the accuracy of meters is checked regularly, you can find out how to do this, and get other information about metering, on our metering website or in the Abstraction Metering Good Practice Manual. The manual will be updated in 2013.

4.8.2 Record keeping and annual returns

We require abstractors to send us their records of meter readings or abstracted quantities. We have different rules on how much information we ask for depending on the type of licence and the quantity

of water authorised to be taken. We do this to reduce the burden on smaller abstractors and concentrate on licences that pose the greatest risk to the environment if too much water is taken or water is taken at the wrong time. This means abstractors may be required to keep more detailed on-site records than we ask them to send us.

We recommend abstractors keep a diary on-site to record meter readings. By keeping a record of the quantity abstracted they can see if they are getting close to their maximum allowance. Abstractors should contact us early if there may be a need to abstract extra water. We cannot guarantee extra water will be available.

4.9 Enforcement policy

We will take appropriate enforcement action on licence holders who do not comply with the conditions of their licence, in line with our approach to Enforcement and Sanctions. We have five levels of follow-up action, which we apply depending on the severity of the infringement:

- site warning
- warning letter
- formal caution
- civil sanctions
- prosecution.

When we assess the level of follow-up action required, we consider the circumstances surrounding the incident. For example, the environmental impact, attitude of the offender and the specific offence involved.

Civil sanctions provide us with new ways to protect the environment and we have been using them since 4 January 2011. There are six types of action we can take:

- Compliance notice - a regulator's written notice requiring actions to comply with the law, or to return to compliance, within a specified period
- Restoration notice - a regulator's written notice requiring steps to be taken, within a stated period, to restore harm caused by non-compliance, so far as possible
- Fixed monetary penalty - a low-level fine, fixed by legislation, that the regulator may impose for a specified minor offence
- Enforcement undertaking - an offer, formally accepted by the regulator, to take steps that would make amends for non-compliance and its effects
- Variable monetary penalty - a proportionate monetary penalty, which the regulator may impose for a more serious offence
- Stop notice - a written notice which requires an immediate stop to an activity that is causing serious harm or presents a significant risk of causing serious harm.

Find out more about civil sanctions on our website.

5 Abstraction Charges

5.1 Types of charges

We charge abstraction licence holders to recover the costs we incur in managing water resources. The Environment Agency Scheme of Abstraction Charges describes the three charges which apply to the abstraction licence process. The three charges are:

- application charge
- advertising administration charge
- annual subsistence charge.

5.1.1 Application charge

The application charge is payable by everyone applying for a:

- licence to abstract or impound water (or alter an impoundment)
- variation to an existing licence and is payable at the point of application.

We do not charge for the following:

- transfer of a licence
- apportionment of a licence
- variation of a licence to reduce the quantity of water authorised to be abstracted
- revocation of a licence
- variation of a licence to impose a time limit on that licence.

5.1.2 Advertising administration charge

We may need to advertise applications for licences to abstract or impound water. To cover these costs there is an advertising administration charge and an additional fee for placing the notice in a local newspaper (this fee varies depending on the newspaper).

Applications for a Temporary Licence or to reduce the quantity on an existing licence do not need to be advertised. We may also waive the need to advertise if we consider that the proposal would have no appreciable adverse effect on:

- any licensed abstraction (which has a protected right – not if it's a Transfer licence)
- any abstraction to which the restriction on abstraction does not apply (lawful users of water and non-licensed protected rights)
- the environment (this includes any Site of Special Scientific Interest or other site of conservation value; or a building or other site of archaeological, architectural or historic interest; any other amenity impact; or a local water feature).

5.1.3 Annual subsistence charge

We apply annual abstraction charges to all licences with the exception of:

- those for direct use in the production of electricity or any other form of power by generating station or apparatus of a capacity of not more than five megawatts
- those from inland waters which the Agency or its predecessors has certified as having an average chloride content in excess of 8,000 milligrams per litre
- Temporary Licences
- Transfer Licences.

The annual subsistence charge is made up of two elements, the Standard Charge and the Environmental Improvement Unit Charge (EIUC).The Standard Charge is the means by which we recover our costs to manage water and regulate abstractions, proportional to the impact of that licence on water resources.

The EIUC is an amount added to the Standard Charge for the recovery of compensation costs associated with the variation or revocation of licences to fund addressing unsustainable abstractions. The money recovered will fund changes to both water company (non Habitats Directive sites) and non water company abstraction licences (all sites). To reflect the split of costs, compensation funds recovered from water companies are managed separately from the funds recovered from other licence holders. This charge will be collected on a regional basis.

6 Environmental restoration

We want to make sure that the amount of water being taken from rivers or aquifers can be sustained without damaging the environment, and where it can't, we may need to adjust the amount of water that is being taken.

We have conducted a review of water abstraction licences for specific designated sites to identify where environmental damage may be occurring or could occur as a result of abstraction. This review is managed through a process called Restoring Sustainable Abstraction (RSA). This work seeks to identify, investigate and solve problems caused by unsustainable abstraction licences.

We assess all licences against the level of impact they are causing, or could cause. Any changes that we make will ensure that abstraction licensing continues to balance the needs of a changing environment with those of people, business and industry. We will restore water levels in rivers, streams, lakes, wetlands and marshes, improve wildlife habitats and the protection of endangered species and will provide more opportunities for recreation. When we make a change to an abstraction licence to prevent environmental damage, the licence holder may be eligible for compensation unless they are causing serious damage under section 27 of the Water Act 2003.

We currently have RSA schemes covering around 600 licences spanning England and Wales. A scheme is work to investigate damage and seek a solution for delivering sustainable abstraction. We have already closed 310 RSA schemes in England, 60 in Wales, and to date we have changed 92 licences to make them more sustainable.

In addition, we are also investigating water bodies that are failing to meet the environmental objectives set by the European Water Framework Directive. About 13 per cent of river water bodies in England and four per cent in Wales are failing to support Good Ecological Status (GES) due to abstraction. About 42 per cent of groundwater bodies in England and six per cent in Wales are failing Good Groundwater Quantitative Status. For water bodies that are classed as heavily modified we measure them against Good Ecological Potential (GEP) rather than Good Ecological Status.

Between ourselves and the water companies we are investigating approximately 700 river water bodies in England and Wales where we suspect flows may not be supporting GES or GEP. This represents about 5% of the total of approximately 14,000 WFD investigations.

RSA is a one of the routes to help deliver River Basin Management Planning objectives for sites already identified through RSA. RSA was not established to deal with additional impacts raised by our investigations for the Water Framework Directive or the larger scale impacts and risks to whole water bodies. These risks will be dealt with alongside existing RSA work.

6.1 How we investigate sites

Identifying a site or WFD water body for investigation does not always mean that it is damaged or that a change needs to be made to an abstraction licence.

We will carry out a comprehensive investigation by:

- **checking** to make sure the site or WFD water body and licences should be investigated through this review
- **investigating** to find out if there is a problem or potential problem. If so, how much of it is due to licensed water abstraction
- **identifying** options to resolve the problem
- **implementing** the preferred solution.

6.2 Making changes to abstraction licences

We will liaise with each licence holder where we believe the abstraction licence may have the potential to cause, or is causing, environmental damage. If our investigation concludes that action is needed, we will then look closely at the options available to remedy the problem.

These options could include a change to the abstraction licence. Our preferred approach is to work with the licence holder to agree the best way to change their licence. If we agree the change with the licence holder they voluntarily apply to us to vary their licence. This is a simple and quick process. The licence holder will benefit from lower charges in cases where the licensed quantities are reduced.

Alternatively, we can propose a licence change using our powers under Section 52 of the Water Resources Act 1991. This is a legal and more complex process. In this instance, the licence holder can object to our proposals and if the abstraction does not represent serious damage, may be entitled to financial compensation. This compensation is funded from the EIUC as outlined in 5.1.3.

If we need to change the terms of an abstraction licence to prevent environmental damage we will talk to the licence holder about the options available. We will find the best solution both for the environment and for the licence holder. Putting the best solution in place may take time, and we need to allow licence holders a reasonable period to manage the consequences of a licence change. We will give as much notice as possible if we propose changes to a licence.

Appendix 1

Water Framework Directive and abstraction licensing

The European Water Framework Directive (WFD) came into force in 2000 and was transposed into UK law in 2003. Its purpose is to enhance the status and prevent further deterioration in the ecology of aquatic ecosystems and their associated wetlands and groundwater. WFD requires that inland and coastal waters reach good chemical and ecological status or potential as set out in River Basin Management Plans (RBMPs). WFD also promotes the sustainable use of water and applies to:

- all surface freshwater bodies (including lakes, streams, rivers and canals)
- groundwater
- groundwater dependant ecosystems (wetlands)
- transitional waters (estuaries)
- coastal waters out to one mile from low-water.

How Abstraction Licensing Strategies support the WFD

The CAMS process provides information on how much water is available for future licensing and the environment. By using this information to manage our water resources sustainably CAMS is supporting the objectives of the WFD by:

- providing a resource assessment of rivers, lakes, reservoirs, estuaries and groundwater referred to as water bodies under WFD
- identifying water bodies that are failing, or are at risk of failing to meet good ecological status by 2015 due to water resource pressure
- preventing deterioration of water body status due to new abstractions
- providing results which feed into RBMPs.

Using Resource Assessment and Management to achieve WFD objectives

The WFD helps us to focus on the ecological 'health' of our water environment. Its primary objectives are to prevent deterioration of ecological status or potential (for heavily modified water bodies), and where necessary, to restore 'good ecological status/potential' for surface water or 'good status' for groundwater. The flow regime is a supporting element to attaining good ecological status.

The criteria we now use to assess the environmental flow needs of a river are referred to as Environmental Flow Indicators (EFIs). The indicators are aligned with the UK water resource WFD good status standards for rivers. These ensure that water resources activities, such as abstraction or impoundment, do not cause or contribute to failure or deterioration in WFD ecological status. To prevent deterioration we can't allow any additional abstraction that would bring flows below the EFI, unless the applicant can prove that there will be no deterioration or impact on WFD status. The only way we can issue a licence that allows deterioration is if the situation meets stringent tests.

CAMS and Water Framework Directive programme of measures

CAMS is one of the main vehicles for delivering abstraction control. Actions, also known as a 'programme of measures', outlined in the RBMP published in 2009, are the means of achieving environmental objectives under the WFD. Abstraction control is just one of several 'basic measures' alongside measures to promote efficient and sustainable use of water.

WFD Ecological Status assessment

Whereas CAMS initially focused mainly on abstraction pressures, WFD seeks to identify **all** significant pressures on every water body. This includes the biological, physio-chemical, hydrological and morphological quality of each water body. We have updated the resource methodology to support this integrated management of the water environment. Depending on the degree of impact on these qualities, an assessment of the ecological status of each water body has been made and reported in Annex B of each RBMP.

Surface water body assessment

For surface waters the impact of pressures is measured against natural flow conditions. Natural flow is the flow that would occur if all artificial influences (abstractions, discharges, flow regulation) were not taking place. Surface waters are assessed to be of High, Good, Moderate, Poor or Bad Ecological Status. At High Ecological Status (HES) the water body must show virtually undisturbed conditions. At HES the hydrological element helps to **define** the status. Water bodies which are in this category have no significant artificial influences and have a high biological quality and the hydrological, morphological and pollution pressures are minimal. They must be maintained at HES and not be allowed to deteriorate.

The WFD sets a target of Good Ecological Status (GES) or Good Ecological Potential (GEP), unless an alternative objective can be justified. At GES the hydrological regime is a **supporting** element. This means that the biological quality of the water body must not be compromised by the flow. Practically, this means that flows must adequately support the river biology. Table A1 shows how ecological status is determined in relation to the natural flow condition.

Ecological Status Morphology	Biology	Physio-chemistry	Hydrology &		Action required
HIGH (Nearly pristine)	Natural flow reference condition ✓	✓	✓ ✓	**HIGH STATUS:** Hydrology helps to define it	If overall HES maintain HIGH Status
GOOD (WFD Primary objective)	✓	✓		**GOOD STATUS**: Hydrology helps to support it	Environmental Flow Indicators supporting GES.
MODERATE	Environmental Flow Indicator ✓				If below the environmental flow indicators flow may not be supporting GES. Restore flows subject to ecological appraisal and economic tests.
POOR	✓				
BAD					

Table A1 Ecological Status in relation to natural flow condition

Groundwater body assessment

A groundwater body can be classed as either Good or Poor based on its chemical status and groundwater abstraction pressures. We assess quantitative status (abstraction pressures) as part of CAMS, based on current groundwater abstraction impacts on each groundwater body. The WFD requires that all groundwater bodies achieve Good Status by 2015 unless alternative objectives are justified. For most of the groundwater bodies at Poor Status we have justified an extended deadline (2027) on the basis that premature action to modify abstractions could be disproportionately costly. This will allow time for investigations to be completed and appropriate measures implemented.

Ecological Potential assessment

Some water bodies have been designated ‘artificial’ or ‘heavily modified’ because they are in use for a specific purpose (such as water supply or power generation) and because of physical alterations cannot be restored to GES without compromising the specified use. In this case the WFD objective is GEP. Those designated artificial or ‘heavily modified’ for water supply purposes include most reservoirs and river reaches where flows are managed for transfer schemes. Some schemes are already in operation to mitigate biological impacts. Consequently the current status of Heavily Modified Water Bodies (HMWBs) has been assessed on the presence or absence of

mitigation measures.

Water bodies failing objectives

Where water bodies do not meet GES or GEP, or may not reach this quality unless action is taken, the measures required to achieve good status are set out in the relevant RBMP.

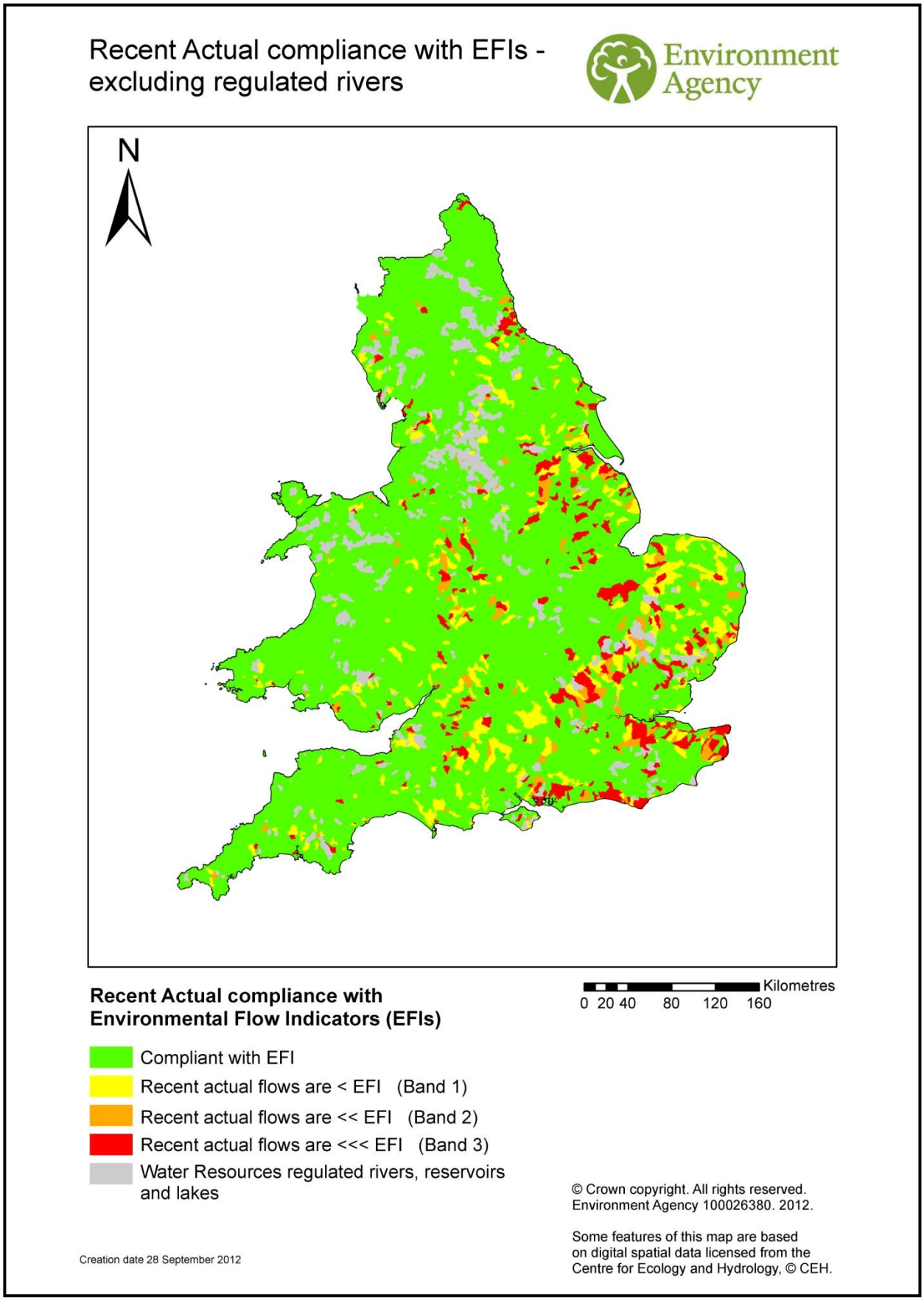
Compliance

We've screened all river water bodies (except those in flow regulated rivers) to show where abstraction impacts may be causing flows to fall below EFIs when the flow is low. Low flow is defined as Q95, that is, the long term average flow which is exceeded 95% of the time. If the actual flow from a water body is higher than the EFI at Q95, it should support GES and is classed as Compliant. If the actual flow falls below the EFI at Q95, flows may not support GES and the water body is assessed as non-compliant.

We've only recently assessed compliance in this way and as such, the data reliability can vary. For example, for some rivers we have been able to collect data from gauging stations which have been monitoring and recording flow for many years. For other rivers, we have had to model flows based on data from similar catchments. We will continue to improve the monitoring and data on which we make these assessments and will continually review and update compliance results. Non-compliant water bodies are divided into those in which we have either a low, medium or high confidence that there is not enough flow to support GES. Table A2 explains non-compliance in relation to flows. Map A3 shows the extent of compliance across England and Wales.

Band 1 yellow	We have a **low** confidence that flows are not supporting GES. These water bodies are defined where there is a deficit in flow below the EFI, but this deficit is less than 25% at Q95
Band 2 orange	We have a **medium** confidence that flows are not supporting GES. These water bodies are defined where there is a deficit in flow below the EFI and this deficit is between 25% and 50% at Q95
Band 3 red	We have **high** confidence that flows are not supporting GES. These water bodies are defined where there is a deficit in flow below the EFI and this deficit is greater than 50% at Q95

Table A2 Non-compliance in relation to flows.



Map A3. Flow compliance, comparing recent actual flows with the flow needed by the environment, the EFI.

Glossary of terms

Abstraction	Removal of water from a source of supply (surface or groundwater).
Abstraction licence	The authorisation granted by the Environment Agency to allow the removal of water.
Catchment	The area from which precipitation and groundwater will collect and contribute to the flow of a specific river.
Discharge	The release of substances (i.e. water, sewage, etc.) into surface waters.
Environmental flow indicator	Flow indicator we use to prevent ecological deterioration of rivers, set in line with those set by UKTAG.
Groundwater and aquifers	Water that is found underground stored within certain types of rock called aquifers. Examples include sandstones and limestones.
Hands off flow	A condition attached to an abstraction licence which states that if flow falls below the level specified on the licence, the abstractor will be required to reduce or stop the abstraction.
Hands off level	A river or groundwater level below which an abstractor is required to reduce or stop abstraction.
Impoundment	An artificial body of water such as a pond or dam for collection or storage of water for future use.
Protected right	Means a right to abstract, which someone has by virtue of the small abstractions exemptions defined in the Water Act 2003 or by virtue of having an abstraction licence. The right protected is the quantity that can be abstracted up to that allowed by the exemption or the terms of the licence. The small abstraction exemptions defined by the Water Act 2003 are for domestic and agricultural purposes (excluding spray irrigation) not exceeding 20 m^3/d.
Surface water	This is a general term used to describe all water features such as rivers, streams, springs, ponds and lakes.
Water bodies	Units of either surface water or groundwater at which assessments are completed for WFD.

List of abbreviations

AMP	Asset Management Plans
CAMS	Catchment Abstraction Management Strategies
Defra	Department for Environment, Food and Rural Affairs
EFI	Ecological Flow Indicator
EIUC	Environmental Improvement Unit Charge
EU	European Union
GEP	Good Ecological Potential
GES	Good Ecological Status
HES	High Ecological Status
NEP	National Environment Programme
Ofwat	The Water Services Regulation Authority
RSA	Restoring Sustainable Abstraction
RBMP	River Basin Management Plans
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
WFD	Water Framework Directive
WRBP	Water Resource Business Plans
WRMP	Water Resource Management Plans

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