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Medway Abstraction licensing strategy

February 2013

A licensing strategy to manage water resources sustainably

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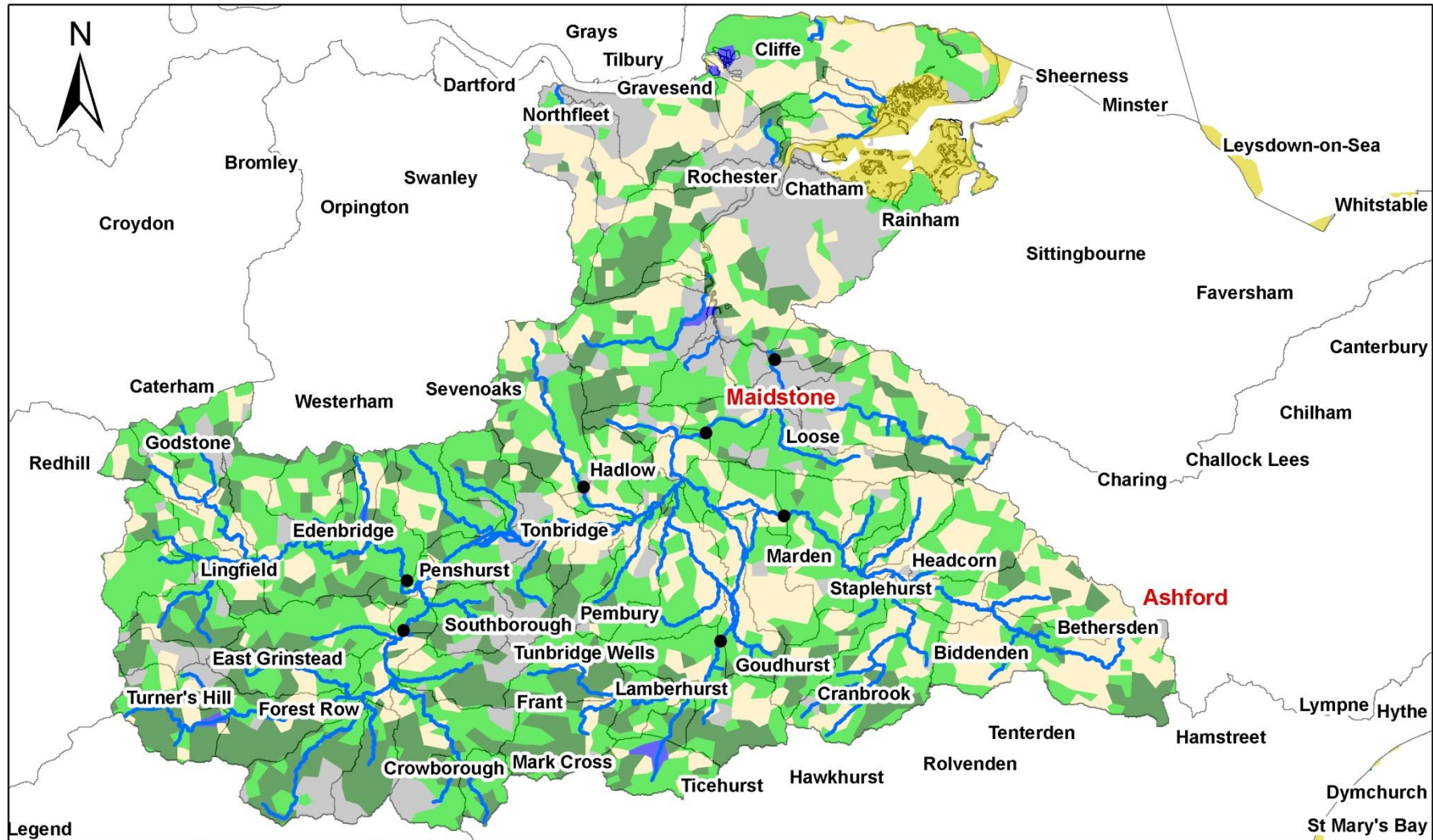
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MEDWAY CAMS



Legend

- Medway_CAMS_APs
- Arable
- Managed Grassland
- Urban
- Forestry / Woodland
- Water
- Medway CAMS WBs

0 3.5 7 14 21 28 Kilometres

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Medway Cams (Catchment Abstraction) Management Strategy area

Foreword

Kent and South London (KSL) is home to six million people and covers an area of 6,000km² with a diverse range of environments and related pressures. Proposed growth will continue to stretch the resources available to support this increasing population.

Water is our most essential natural resource, and it is our job to ensure that we manage and use it effectively and sustainably. KSL is one of the driest parts of England and Wales and there are many catchments where there is little or no water available for abstraction during dry periods. Demand from agriculture and industry, and above average household consumption all add to this pressure and affect both the water environment and fresh supplies.

The latest population growth and climate change predictions show that pressure on water resources will continue to increase in the future. We have to act now to make sure that we continue to maintain and improve sustainable abstraction and balance the needs of people and the environment.

This licensing strategy sets out how we will manage water resources in the catchment, existing abstraction licences and water availability for further abstraction



Andrew Pearce

Kent and South London Area Manager

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Glossary of terms

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1. About the Licensing Strategy

This **Licensing Strategy** sets out how water resources are managed in the Medway area. It provides information about where water is available for further abstraction and an indication of how reliable a new abstraction licence may be.

This strategy was produced in February 2013 and it supersedes the strategy issued in 2005.

How CAMS contributes to achieving environmental objectives under the (WFD) Water Framework Directive

The Water Framework Directive's main objectives are to protect and enhance the water environment and ensure the sustainable use of water resources for economic and social development.

Catchment Abstraction Management Strategies (CAMS) set out how we will manage the water resources of a catchment and contribute to implementing the WFD.

CAMS contribute to the WFD by:

- providing a water resource assessment of rivers, lakes, reservoirs, estuaries and groundwater referred to as water bodies under the WFD;
- identifying water bodies that fail flow conditions expected to support good ecological status;
- preventing deterioration of water body status due to new abstractions;
- providing results which inform River Basin Management Plans ([RBMPs](#)).

When is an abstraction licence required?

You need a licence from us if you want to abstract more than 20m³/day (4 400 gallons) of water per day from a:

- river or stream
- reservoir, lake or pond
- canal
- spring or
- an underground source

Whether or not a licence is granted 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.

If you want to apply for an abstraction licence or make changes to a licence that you already have then, please contact us:

- by telephone on 03708 506 506
- by email at enquiries@environment-agency.gov.uk
- or visit our website at www.environment-agency.gov.uk.

Sustainable abstraction

This licensing strategy has been produced using evidence and information gathered during the Catchment Abstraction Management Strategy (CAMS) process. Through this process we consider the impact of abstraction at all flows. This helps to manage future abstraction more sustainably.

We now assess water resources at a sub-catchment level called water bodies. This means that we can provide more detailed information on the availability of water resources in the Medway CAMS area compared to the scale used in the previous strategy.

Within this strategy we also outline where we may need to reduce current rates of abstraction and our approach on time limiting licences.

The background, aims and principal of CAMS, the over arching principles we use when managing abstraction licences and links with other initiatives are detailed in our document: [Managing Water Abstraction](#). You should read Managing Water Abstraction when reading this catchment specific licensing strategy.

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2. Medway CAMS area

The Medway is the largest river basin in Kent covering an area of 1,800 km² and contains 260 km of main river (see Map 1). The River Medway rises in West Sussex and flows north east towards Penshurst where it is joined by the River Eden. As the Medway flows across the Vale of Kent other tributaries, including the Bourne, Teise and Beult join. The Medway then cuts through the Greensand Ridge beyond Yalding before reaching its tidal limit at Allington Lock in Maidstone. It then flows north cutting through the Chalk before the Estuary widens at Rochester.

The Medway catchment contains the greatest urban development in the Kent area outside south east London. The principal towns of this area include Gravesend, Maidstone, Tonbridge, Royal Tunbridge Wells, Chatham and Rochester in Kent, as well as East Grinstead in West Sussex and Crowborough in East Sussex. There has been considerable urban development in the last thirty years, mainly on former agricultural land around the commuter centres of Crowborough, Edenbridge, Tonbridge and Royal Tunbridge Wells. Northern parts of this area, particularly around the upper Estuary bear the legacy of an extensive history of heavy manufacturing industry. Even today, the area north of Maidstone is still characterised by industry with chemical, pharmaceutical and major cement works and paper mills.

The key aquifers that influence the Medway catchment are Chalk, Lower Greensand and Hastings Beds. The chalk is the most important aquifer in the Medway catchment and it provides 97% of the groundwater resource and just over half of the total resource. This chalk outcrop forms part of the chalk hills to the south of London that make up the North Downs. It is these springs that flow from the Chalk and over the Gault Clay in the North West of the catchment.

The Lower Greensand provides approximately 6% of the groundwater resource within the catchment. This aquifer is exposed around the edges of the Wealden Anticline and is known as the Greensand Ridge.

The Hastings Beds, are locally important aquifers, providing baseflow to the headwater streams of the Upper Medway and the River Eden. But in resource terms are classified as a minor aquifer, provides less than 1% of the total licensed resource for the Medway catchment. The Hastings Beds are composed of the Ashdown Beds and Tunbridge Wells Sand, which are separated by the Wadhurst Clay. The Wadhurst Clay forms the base of the Tunbridge Wells Sand, which in turn is confined in places by the Weald Clay. Where the Tunbridge Wells Sand is unconfined it gives rise to a number of springs, most notably the chalybeate springs, for which gave Tunbridge Wells its name 400yrs ago.

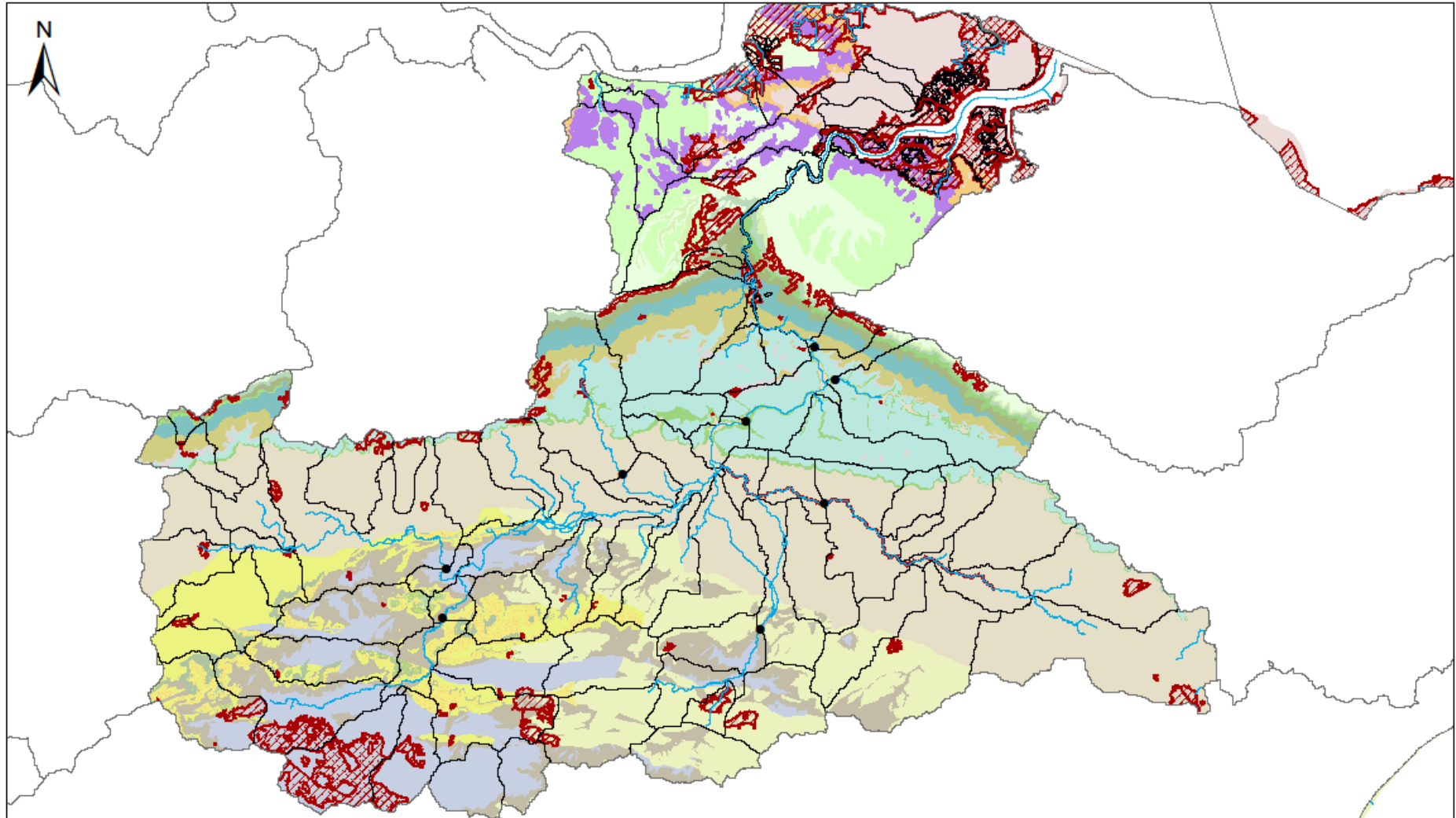
Approximately 40% of the water abstracted each year in the Medway catchment is drawn from wells and boreholes. This in turn represents about 10% of the total effective rainfall on the catchment. Part of this provides recharge to the Chalk and Lower Greensand aquifers, which forms the North Downs. There is a negligible volume of abstraction from the Hastings Beds aquifer.

Over 70% of total abstraction in this catchment is for public water supply, with over 90% from surface water sources. Of this almost half is abstracted from the Middle Medway and about a third from the River Eden. To a lesser extent surface water abstraction occurs on the River Bourne, River Beult and River Len.

The largest volume of groundwater abstraction occurs from the Chalk aquifer, almost 60% of this is for industrial use, however over 15% is for non-consumptive uses. The remaining abstraction is for public water supply. Abstraction from the Lower Greensand aquifer is primarily for industrial purposes and public water supply. Over 50% of abstraction from the Hastings Beds is for public water supply. Almost 30% of abstraction in this unit is for general farming and spray irrigation uses. The remaining abstraction is for industrial use.

[Map 1](#) shows the geology and designated sites within the Medway catchment.

Geology and Designated Sites within Medway CAMS



Legend

- | | | | | |
|--------------------------|------|-----------------------|-----------------------|---------------------------|
| ● Medway CAMS AP's | SSSI | London Clay | Thanet Sand Formation | Ashdown Formation |
| Rivers | SPA | Lower Chalk | Upper Chalk | Gault Formation |
| Medway CAMS Water Bodies | SAC | Lower Greensand Group | Wadhurst Clay | Tunbridge Sands Formation |
| | | Middle Chalk | Weald Clay | |

0 2.5 5 10 15 20 Kilometers

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Creation Date: December 2012

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3. Water resource availability of the Medway area

3.1 Resource assessment

Resource assessment is at the heart of abstraction management. To manage water effectively we need to understand how much is available and where it is available, after considering the needs of the environment. We have a monitoring network to measure river flows and groundwater levels. We use this data along with our knowledge of human influences and environmental needs to establish a baseline of water availability for each water body that builds into a picture for the catchment. The main components of this assessment that help us to understand the availability of water resources are:

- a resource allocation for the environment defined as a proportion of natural flow, known as the Environmental Flow Indicator (EFI);
- the Fully Licensed (FL) scenario - the situation if all abstraction licences were being used to full capacity;
- the Recent Actual (RA) scenario – the amount of water which has actually been abstracted on average over the previous six years.

River flows change naturally throughout the year, so we want to protect flow variability in our rivers from low to high flow conditions. We use flow statistics to help to do this. Flow statistics are expressed as the percentage of time that flow is exceeded. Resource availability is calculated at four different flows, Q95 (lowest), Q70, Q50 and Q30 (highest).

This information gives a realistic picture of what the current resource availability is within a given water body. Water bodies are sub-catchment surface water units or groundwater units on which we carry out assessments and map results.

NB: Natural flows for CAMS AP water bodies have been taken from information provided in the CAMS ledgers. Natural flows for other water bodies have been derived based on simple interpolation between, or downstream of, CAMS APs, based on catchment area.

Map 2 **Water resource availability colours for Medway CAMS** Provides an opportunity to reflect different CAMS colours for smaller coastal water bodies should this be required.

3.2 Resource availability

3.2.1 Surface water

If you want to abstract water, you need to know what water resources are available within a catchment and where abstraction for consumptive purposes is allowed. To show this we have developed a classification system which indicates:

- the relative balance between the environmental requirements for water and how much is licensed for abstraction;
- whether water is available for further abstraction;
- areas where abstraction may need to be reduced.

The availability of water for abstraction is determined by the relationship between the fully licensed and recent actual flows in relation to the EFI. The results mapped onto these water bodies are represented by different water resource availability colours showing the availability of water resource for further abstraction. The water resource availability colours are explained in Table 1.

In addition to these water resource availability colours we've classified some surface water bodies as 'high hydrological status' which are coloured blue on the maps. In these water bodies very little actual abstraction occurs and they show virtually undisturbed, or close to natural, flow conditions.

Another category of water body are Heavily Modified Water Bodies (HMWB). These can be classified for many reasons but for water resources they are classified if they contain a lake and/or reservoir that influences the downstream flow regime of the river. The downstream 'flow modified' water bodies are also classified as heavily modified.

We'll add any conditions necessary to protect flows to a new licence during the licence determination procedure. We will base licence conditions on the water resource availability at different flows (high to low). Table 1 lists the implications for licensing for each water resource availability colour.

In cases where there is a flow deficit (RA is below the EFI) or risk of a flow deficit (FL below the EFI), there may be water available for abstraction at higher flows. This means that water may be scarce at low flows, but may be available to abstract at medium or high flows. A licence may still be granted but with conditions which protect the low flows. This usually takes the form of a Hands off Flow (HOF) condition on a licence which requires abstraction to stop when the river flow falls below a certain amount. It's important to realise that artificial influences in a catchment (such as abstractions, discharges or releases from reservoirs) can act to both decrease and increase river flows at different times of the year. However, Hands Off Flows and other conditions that we might apply to licences can be used to protect vulnerable flows whenever they occur

Water 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. This scenario highlights water bodies where flows are below the indicative flow requirement to help support Good Ecological Status (as required by the Water Framework Directive Note : we are currently investigating water bodies that are not supporting GES / GEP). 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.
HMWBs (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. More detail if applicable can be found in section 4.2.1 Surface Water There may be water available for abstraction in discharge rich catchments, you need to contact the Environment Agency to find out more.

Table 1 Implications of water resource availability colours.

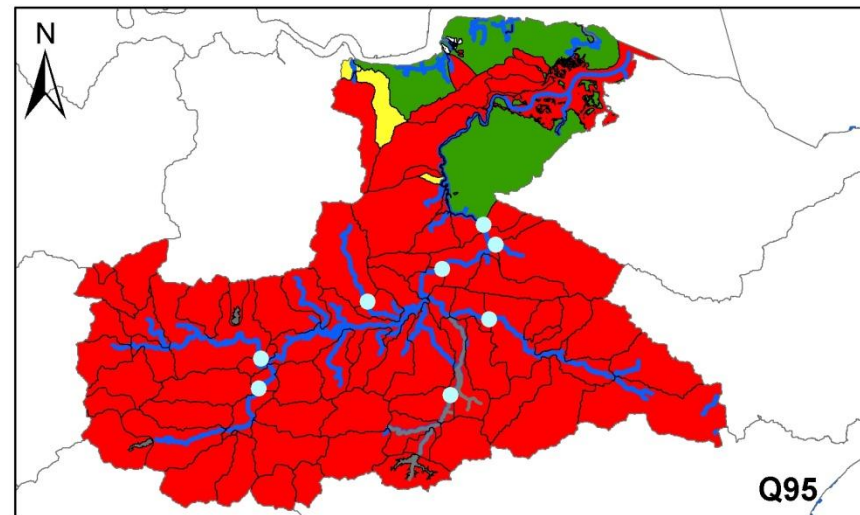
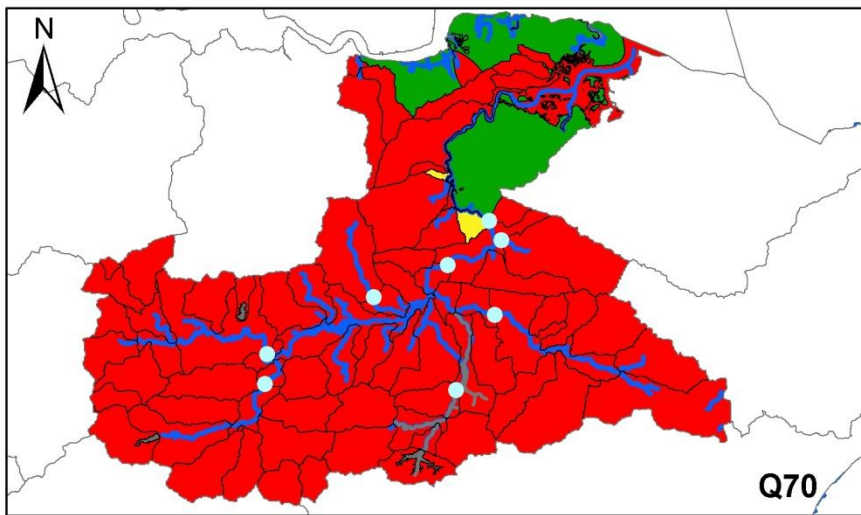
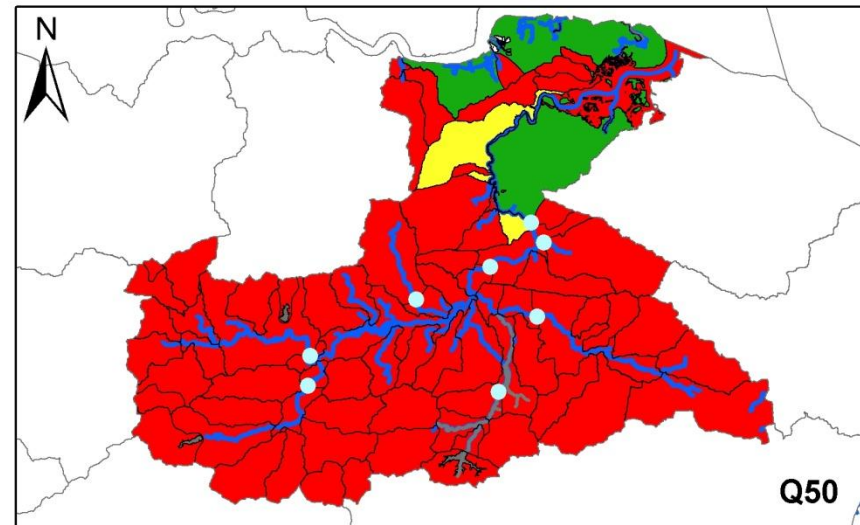
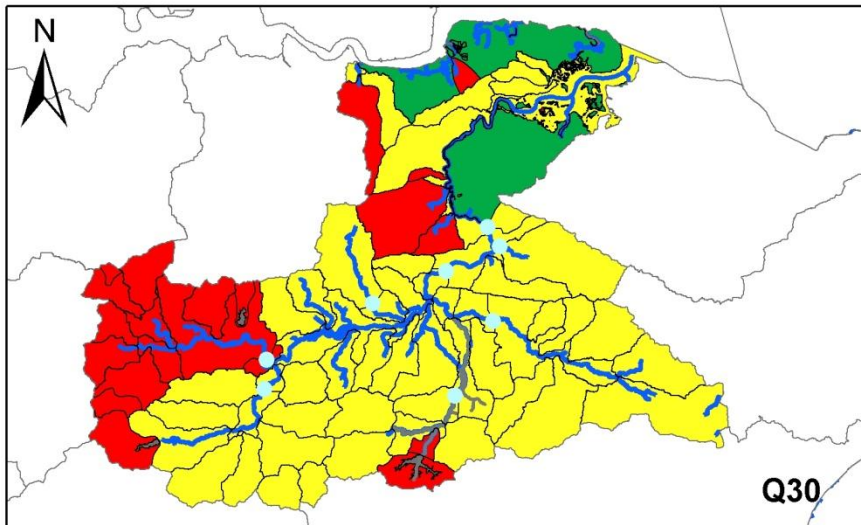
3.2.2 Groundwater

Groundwater availability is guided by the surface water resource availability colours unless we have better information on principal aquifers or are aware of local issues we need to protect. Please refer to section 4.2.2 for further information.

The same availability is applied to groundwater and surface water. In cases where this is different, Map 3 shows water resource availability colours in Medway area, specifically for groundwater.

GWMU resource availability colour	Implication for licensing
Water available for licensing	Groundwater unit balance shows groundwater available for licensing. New licences can be considered depending on impacts on other abstractors and on surface water.
Restricted water available for licensing	<p>Groundwater unit balance shows more water is licensed than the amount available, but that recent actual abstractions are lower than the amount available OR that there are known local impacts likely to occur on dependent wetlands, groundwater levels or cause intrusions but with management options in place.</p> <p>In restricted groundwater units no new consumptive licences will 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.</p> <p>In other units there may be restrictions in some areas e.g. in relation to saline intrusion</p>
Water not available for licensing	<p>Groundwater unit balance shows more water has been abstracted based on recent amounts than the amount available.</p> <p>No further consumptive licences will be granted.</p>

Medway CAMS Downstream Resource Colours



Legend

- Medway_CAMS_APs
- Medway CAMS Water Body Boundaries
- Medway Rivers
- Heavily Modified and Artificial Rivers
- Heavily Modified and Artificial Lakes
- Water available for licensing
- Restricted water available for licensing
- Water not available for licensing

Creation date September 2011

0 3.5 7 14 21 28 Kilometres
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Map 2 Water resource availability colours for Medway CAMS.

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3.3 Resource reliability

If you want to apply for a licence, it is worth considering that in some areas a new, consumptive abstraction may not be 100% reliable. Reliability information is based on CAMS resource availability colours and is a way of presenting the reliability of new abstractions at all flows.

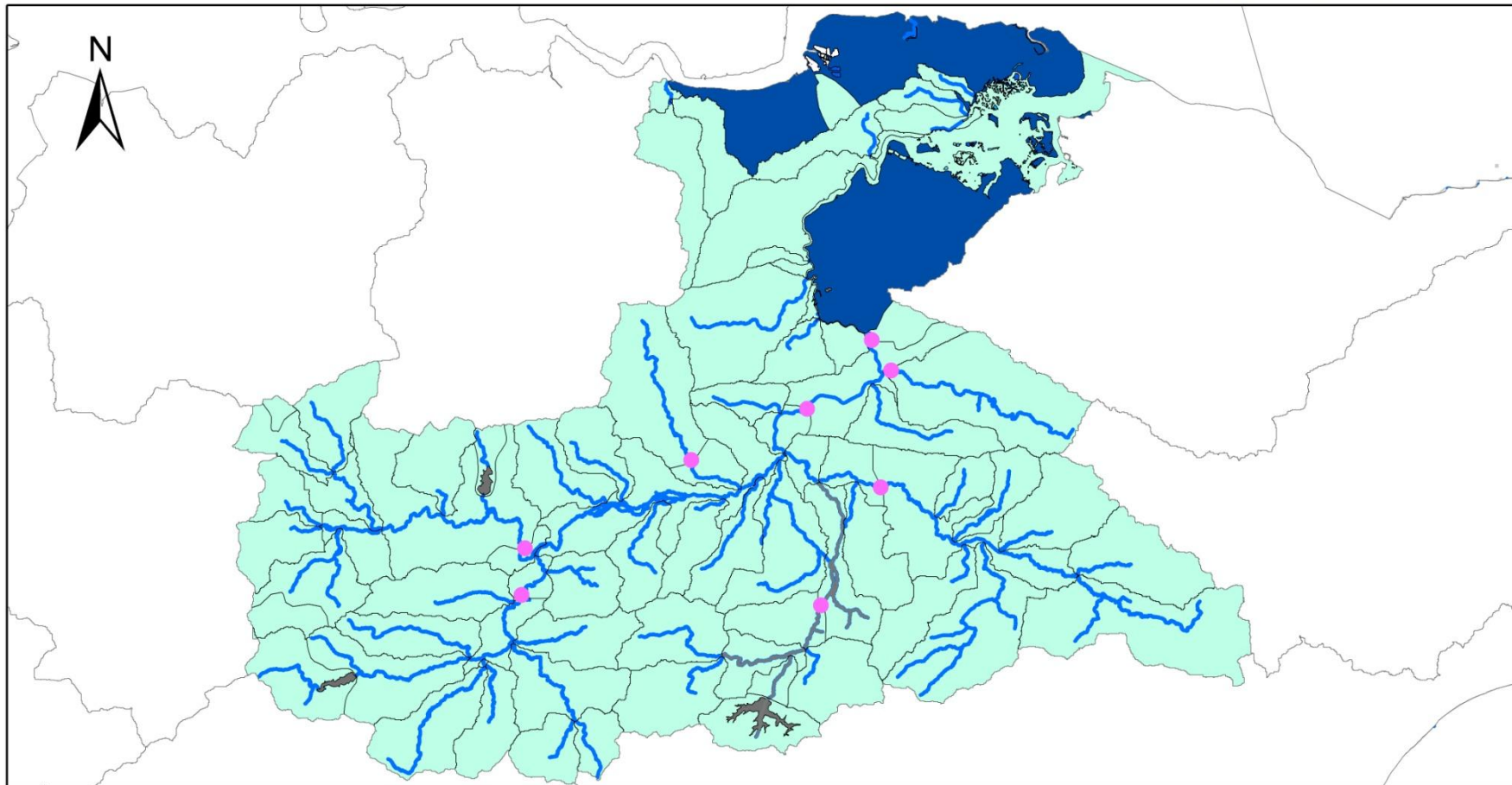
The availability of water for abstraction within a river varies greatly from high to low flows. By assessing the quantity of water available at different flows it is possible to see when there is a surplus or deficit of water and the associated reliability of an abstraction. This is an indication only; actual reliability of a licence will be discussed on application.

Table 2 shows the resource availability colour associated with the percentage reliability of consumptive abstraction. Map 4 gives an indication of the resource reliability in Medway area expressed as percentage of time however where dark blues areas are shown on the map this does not necessarily mean water is available in large quantities.

Resource	Percentage of the time additional consumptive resource may be available
	Consumptive abstraction available less than 30% of the time.
	Consumptive abstraction available at least 30% of the time.
	Consumptive abstraction available at least 50% of the time.
	Consumptive abstraction available at least 70% of the time.
	Consumptive abstraction available at least 95% of the time.
	Not assessed

Table 2 Percentage reliability of consumptive abstraction.

Medway CAMS Resource Reliability (% of the time)



Legend

- | | |
|--|---|
| Medway CAMS WBs | Water Resources available less than 30% of the time |
| Heavily Modified and Artificial Rivers | Water Resource available at least 30% of the time |
| Heavily Modified and Artificial Lakes | Water Resources available at least 50% of the time |
| Medway Rivers | Water Resources available at least 70% of the time |
| | Water Resources available at least 95% of the time |

0 3.75 7.5 15 22.5 30 Kilometres

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Map 3 Water resource reliability expressed as percentage of time available.

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4. How we manage abstractions in the Medway area

4.1 Principles

The document [Managing Water Abstraction](#) outlines the over-arching principles that we follow in managing our water resources. How we apply these principles in the Medway area is outlined in this section. If you want to abstract water it outlines where water is available for further abstraction and the principles we follow in assessing your application for a licence.

Abstraction licence application process

Anyone wanting to take more than 20m³/day (4 400 gallons) from a 'source of supply' (river, stream, lake, well, groundwater, etc) must have an abstraction licence. The application process for abstraction is similar to the planning process in that we may require the application to be advertised and may require supporting environmental information. When considering the application we check that the quantities applied for and the purpose of the abstraction are reasonable, that there is sufficient water available to support it and that the potential impacts on the environment and other water users are acceptable. Depending on the outcome of our investigations we will issue a licence either as applied for, or with conditions that restrict the abstraction to protect the environment or other users. In certain cases we may have to refuse the application. Any applicant who is not happy with our determination (decision) has the right to appeal against it.

Each application is determined on its own merits

Whilst this document may say that water is available for further abstraction, this does not guarantee that all applications will be successful. We'll determine each application upon its own merits and any local impacts.

A licence does not guarantee that water is available

It's important to understand that when we issue a licence we do not guarantee the supply of water. We have to protect the environment and rights of other abstractors. To do this we may add constraints to licences. Licence holders need to understand the implications of this as it affects the reliability of supply. For example, in drier years it's more likely that conditions will come into effect and abstraction is more likely to be stopped.

Abstractions are managed to protect the environment.

No ecological deterioration

We assess the impact of new applications for water to make sure that the resultant river flows:

- will maintain a good ecology or if the ecology is not good, will not deteriorate the ecology of our rivers further;
- will maintain the near pristine condition of high hydrological regime water bodies.

We'll also take action if necessary to limit the increase in current abstraction, if we think this will lead to deterioration of the ecology or the near pristine condition of our high hydrological regime water bodies.

These principles apply to the water body in which the abstraction is located and also to all downstream water bodies that may be affected by any reduction in abstraction related flow. Doing this means that we will maintain the water body status as reported in the River Basin Management Plans (2009) and ensure compliance with the European Union Water Framework Directive.

Water efficiency and demand management:

We need to make the best use of our existing water resources. Adopting water efficiency and demand management measures can help us achieve this goal. Water efficiency is one of the tests that will need to be satisfied before we grant a new licence or renew a time limited licence. We will promote the wise and efficient use of water and actions to limit demand (and reduce leakage) to curb the growth in abstraction and limit the impact on flows and any consequent impact on the ecology. For further details on our general approach to licensing please see the document [Managing Water Abstraction](#).

- **Building Design**

The South East is densely populated with household water use being the highest in the country at 164 litres per capita consumption per day (PPC) in comparison to the national average of 148 PCC. Throughout the area we are working closely with local authorities to ensure water conservation and efficient water use is embedded within their spatial strategic planning policies. One mechanism this can be achieved is through requiring all new homes and business units to be designed to achieve a minimum water efficiency levels. Water efficiency and the reduction in household water demand are crucial elements of good water resource management planning especially as the South East is under increased pressure from climate change and population growth. Local Authorities in Kent are signing the Climate Local commitment to share knowledge and work towards agreed targets that will support the quality of life for those living and working in Kent. Climate Local Kent includes targets to reduce water consumption and support retrofitting schemes www.kent.gov.uk/climatelocalkent

- **Sustainable urban drainage systems (or SUDS)** is the practice of controlling surface water runoff as close to its origin as possible, before it is discharged to a watercourse or the ground. This involves moving away from traditional drainage systems to softer engineering solutions. The benefits are reduced flood risk, improved water quality and increased groundwater recharge. This water can also be collected and reused for non-potable purposes.

- **Water audits**

All businesses can use their water wisely. By investing a little time and money in implementing a simple water management plan, an organisation may reduce its water consumption by up to 80%, releasing money to be invested in other parts of the business and establishing 'green' credentials. Water audits allow the volume of water used during an average year to be calculated and suggest ways to reduce water use and therefore costs.

- **Environment Agency**

The Environment Agency provides a range of free guidance on water efficiency, including best practice case studies for agriculture, business, industry, public sector and the domestic consumer. Consult www.environment-agency.gov.uk/savewater.

- **Water companies**

For local water efficiency advice, contact your water company.

Southern Water www.southernwater.co.uk

South East Water www.southeastwater.co.uk

Thames Water Utilities www.thameswater.co.uk/

Affinity Water www.affinitywater.co.uk

Sutton & East Surrey Water www.waterplc.com

- **Water Regulations Advisor Service**

WRAS provides advice on the Water Supply (Water Fittings) Regulations which prevents waste, misuse, undue consumption or contamination of wholesome water. Consult www.wras.co.uk or telephone 01495 248454.

- **Business/Commercial**

Waterwise

Waterwise is a UK NGO focused on decreasing water consumption in the UK and building the evidence base for large scale water efficiency. www.waterwise.org.uk/pages/save-water.html

- **Public sector**

Water Summit - Water Resilience Framework

Kent County Council and the Environment Agency are working in partnership to develop a Water Resilience Framework for Kent. In part this included a 'Water Summit' held in 2012 with water companies, public sector organisations, NGOs, businesses, community and local interest groups across Kent. The aim to highlight local water resource pressures, drought issues and long-term local water risks, and establish a consensus on what needs to be done to develop a Water Resilience Framework for Kent which in turn would be of benefit to the local economy and jobs.

- **Water in the Schoolbenchmarks**

Water in the School is a website supported by a number of water companies aimed at National Curriculum Key Stage 2 and 3 pupils and their teachers. It provides a wealth of information for pupils on how to make savings. Consult www.waterintheschool.co.uk

- **Hospitals**

Water UK has collaborated with NHS Estates and Watermark to produce *Water Efficient Hospitals*, an information pack to help hospitals use water wisely and save money by cutting both water and energy bills. Consult www.water.org.uk/index.php?cat=3-4701

- **Agriculture & Horticulture**

It is recognised there is a need to balance between people, business and the environment. We are working closely with Kent County Council and others on a programme to address the rapid growth of water demand within Kent's horticulture and agriculture sector which was an action from the Kent Environment Strategy.

- **UK Irrigation Association (UKIA)**

The UKIA provides information on irrigation to its members and runs technical workshops. Consult www.ukia.org

- **DEFRA's Rural Development Service (RDS)**

DEFRA's Rural Development Service provides grants for agricultural water resources management schemes under its Rural Enterprise Scheme. Consult www.defra.gov.uk/rural/rdpe/ or telephone 0845 9335577.

- **Linking Environment & Farming (LEAF)**

LEAF promote and develop integrated farm management, this includes whole farm water savings. Consult www.leafuk.org or telephone the Kent LEAF office 01580 712488.

Impoundments

Applications for impoundment licenses will be dealt with on a case-by-case basis but the Environment Agency is generally opposed to in-stream impoundments as they can have significant impact on the flow regime and the natural ecology. An impoundment is a dam, weir or other construction in an inland waterway that obstructs or impedes flow and/or raises water levels.

Hydropower

Water abstraction for hydropower schemes is non-consumptive, with all water used returned to the watercourse. Hands off Flows and maximum abstraction volumes are determined in line with the Environment Agency's Hydropower Good Practice Guidelines and based on the assessment of environmental risk for each scheme. For further information please refer to our [website](#).

4.2 Abstraction restrictions

When issuing a licence we have to protect the environment and rights of other abstractors. To do this we may add conditions to licences.

Time limited licences

In recognition of changing pressures on water resources all new licences and variations (other than downward variations or minor variations having no environmental impact) will have a time limit imposed. This allows for the periodic review and changes to abstraction licences where circumstances have changed since the licence was granted.

All new licences within a CAMS area have a **common end date** (CED) so they can be reviewed at the same time. When 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. On replacement the normal duration will then usually be 12 years.

However, where we are uncertain about the long term impacts of an abstraction we will grant a short term licence during which time potential impacts are monitored.

12% of the licences in Medway CAMS are time-limited. CEDs occur every twelve years.

The next CED for Medway CAMS is 2018 and the subsequent one is 2024.

Time-limited licences may be renewed with more restrictive terms and conditions to protect the environment, i.e.:

- Licensed quantity may be reduced to reflect actual abstraction rates;
- We will endeavour to provide licence holders notice of significant changes to their abstraction permission. These could include:
 - A Hands Off Flow (HOF) may be imposed
 - And/or, a hands-off groundwater level may be imposed.
 - Increased monitoring of abstraction volume, and/or monitoring of surface/ groundwater levels.

Additional information about the replacement of time limited licences is available in [Managing Water Abstraction](#).

Where possible we will seek to secure downward variations or apply surface or groundwater level conditions to existing licenses by using the criteria for the renewal of time limited licenses.

Hands off flow conditions

To protect the environment we may issue a licence with a condition referred to as a 'Hands-Off Flow' (HOF). This specifies that if the flow in the river drops below that which is required to protect the environment abstraction must stop, hence 'Hands-Off Flow', these conditions are listed in Table 3.

4.2.1 Surface water

We assess surface water flows at Assessment Points (APs) which are significant points on the river, often where two major rivers join or at a gauging station. Where flows fall below the EFI, new abstractions may be subject to HoFs.

Table 3 gives an indication of how much water is available for further abstraction and the associated restrictions that we may apply to new and varied abstraction licences from the main river. Tributaries to the main river may be subject to different restrictions and quantities.

Each HOF is linked to an AP and is dependent on the resource availability at that AP. In some cases additional restrictions may apply to licences where there is a more critical resource availability downstream to protect the ecological requirements of the river. This is detailed in the last column of Table 3 if applicable.

All abstraction licence applications are subject to an assessment to take account of any local and downstream issues and may be subject to further restrictions.

Reading from top to bottom in Table 3 are the APs in the Medway CAMS area. Reading across the columns you can see the potential HOF that may be applied to a licence, the number of days water may be available under this restriction and the approximate volume of water in MI/d that may be available. In cases where there is water available at all flows we may apply a Minimum Residual Flow (MRF) to protect very low flows. We'll decide this on a case by case basis.

An example is provided on the first row in table 3 below. Further information on water availability, restrictions, etc can be found below

AP	Name	Resource Reliability	HOF Restriction (MI/d)	Number of days per annum abstraction may be available	Approximate volume available at restriction (MI/d)	Is there a gauging station at this AP?	Additional restrictions AP name and restriction
1	Chafford - Upper River Medway	Consumptive abstraction available less than 30% of the time.	380 (890)	55 (84)	230 (100)	Yes	Any local HOF issued will need to take account of the additional HOF restrictions at Teston gauging station as this is the critical assessment point for the Medway catchment. Figures in brackets represent the additional Teston HoF condition.
2	Penshurst - River Eden	Consumptive abstraction available less than 30% of the time.	418 (890)	37 (84)	122 (100)	Yes	
3	Hadlow - River Bourne	Consumptive abstraction available less than 30% of the time.	30 (890)	55 (84)	2 (100)	Yes	
4	Stonebridge - Upper River Teise	Consumptive abstraction available less than 30% of the time.	86 (890)	73 (84)	11 (100)	Yes	
5	Stilebridge - River Beult	Consumptive abstraction available less than 30% of the time.	180 (890)	73 (84)	460 (100)	Yes	
6	Teston Middle - River Medway	Consumptive abstraction available less than 30% of the time.	890	84	100	Yes	Due to the artificial influences by Bewl Reservoir discharge releases and to protect existing licensee's the latest HOF restriction remains at 890MI/d.
7	Lenside - River Len	Consumptive abstraction available less than 30% of the time.	71 (890)	73 (84)	35 (100)	Yes	There are few abstractions along this stretch but in order to protect flows in downstream catchment the Len is classed as 'Water not available for licensing'. Any local HOF issued will need to take account of the HOF restrictions at Teston gauging station as this is the critical assessment point for the Medway catchment. Figures in brackets represent the additional Teston HoF condition.
8	Allington - Lower River Medway	Consumptive abstraction available less than 30% of the time.	890	84	100	Yes	This HOF restrictions relates to Teston gauging station as this is the critical assessment point for the Medway catchment.

Table 3 HOFs for the assessment points of Medway CAMS.

Assessment Point descriptive

AP1 - Chafford - Upper River Medway

The headwaters of the River Medway, upstream of this assessment point are derived from spring flows located at and around Ashdown Forest. Despite this significant baseflow, at the top of the catchment it remains a fairly responsive regime this is in part due to the steep gradient and Wadhurst Clay geology. The catchment is predominantly rural in character, apart from East Grinstead, Forest Row and Crowborough conurbations. Weirwood reservoir operated for public water supply is the largest abstraction in the upper catchment.

AP 2 - Penshurst - River Eden

The river Eden is a meandering channel where back erosion and accretion continually change the channel morphology. The River Eden is a tributary of the river Medway; it rises from the Chalk at the foot of the North Downs and Greensand Ridge and drains from the Weald Clay joining the Medway at Penshurst. On a tributary of the river Eden is Bough Beech Reservoir which is a pumped storage reservoir heavily influencing the river flow.

AP 3 - Hadlow - River Bourne

The Bourne has a large base flow which originate from springs at the base of the Chalk and Greensand ridge, these streams flow over the Weald Clay through Hadlow and East Peckham before its confluence meets the Medway. There are significant abstractions from the Agriculture and Aquaculture industry with water company groundwater abstractions influencing surface flows.

AP 4 - Stonebridge - Upper River Teise

The Teise is located to the South East of Tunbridge Wells and East to its confluence with the river Bewl where Bewl Reservoir is sited. The reservoir has a heavy influence over this system, however the abstractions for the pumped storage reservoir have stringent conditions designed to ensure protection of the environment during periods of low flow.

AP 5 - Stilebridge - River Beult

The River Beult is a particular flashy behaviour due to the low storage capacity of the baseline clay geology, therefore suffers heavily during extended periods of dry weather. Due to the little natural storage capacity in the catchment much of the low flows are supported by Water Company waste water treatment works discharges. Whilst the water balance for this unit is not in deficit the unit must ensure flow is protected to meet the demands for the River Medway further downstream. Predominately the water abstracted in this catchment is for agricultural spray and trickle uses and fish farms.

AP 6 - Teston Middle - River Medway

At this point the majority of the main tributaries have met the River Medway, there are significant artificial influences with the combination of three public water supply reservoirs upstream of the Teston gauging station, namely; Weirwood, Bough Beech and Bewl Water Reservoir.

AP 7 - Lenside - River Len

This spring-fed stream drains the Greensand Ridge, which consists of a sequence of water bearing limestones and sandstones. In comparison to other areas this has relatively few abstractions however the river has many in-stream obstructions impacting the ecology and fish communities.

AP 8 - Allington - Lower River Medway

Allington is the lowest assessment point found within the Medway catchment past this point the river is under tidal influence. Allington is the first of a series of locks on the Medway which controls the water levels and out flows of the Medway to the Estuary. At this assessment point the flow needs of the down stream Estuary can be taken into account, and has large industrial abstractions.

Catchment Wide Strategy

Encouraging Reservoir storage - Where possible, potential abstractors are encouraged to apply to take water during high flow periods, not necessarily restricted by season, to provide reservoir storage for subsequent re-use during drier months. This allows abstractors to use water for consumptive purposes during summer months when other surface water resources are unavailable.

Strategic Guidance for the Irrigation of Golf Courses - In assessing abstraction licence for golf courses, we generally allow only sufficient water for irrigating greens and tees. There is a “presumption against” the irrigation of fairways and approaches. As with licence applications this allocation of water will have to be backed by reasonable need.

Use of the precautionary principle - In a very small number of cases where there uncertainty remains over the potential impact of a proposed abstraction, we have refused licences, or where the situation permits we will issue them with shorter time limit on the grounds of the “precautionary principle”.

Licence Strategy for new and varied licenses:

Surface Water Abstraction: Within this catchment even winter-only licences will be limited, despite the “HOF” restrictions detailed in table 3, because we will need to ensure there is enough flow to meet the environments needs and to protect other downstream licence holders. Any new or varied surface water licences that are granted will have an appropriate Hands Off Flow condition tied to Teston Flow gauging station known as the ‘Medway Condition’ (MedCon). The HOF levels applied to licenses range from 275MI/d to 890MI/d newer licenses have more stringent HOF conditions. The Medcon is implemented most years, for approximately four to five months from early Summer however as we experience more extreme weather patterns the restrictions can remain on throughout Winter.

4.2.2 Groundwater

Where groundwater (GW) abstractions directly impact on surface water flows, the impact is measured at the surface water AP. Restrictions may be applied to these licences.

Where groundwater abstractions are likely to impact surface water features, or reduce baseflow to a river, a Hands off Level (HoL) condition may be applied to the abstraction. This is a groundwater level below which an abstractor is required to reduce or stop abstraction. These restrictions that might be applied to abstractions will be determined on an individual bases. Within the Medway CAMS the groundwater principal aquifer licensing strategy remains in place.

Groundwater - Principal aquifer licensing strategy - There has been a “presumption against” further unconstrained consumptive abstraction from the Chalk and Lower Greensand aquifers. The groundwater drought of the late 1980’s and early 1990’s highlighted the vulnerability of these very important water sources. In response a groundwater management policy was introduced by the Environment Agency’s predecessor organisation, the National Rivers Authority (NRA), in 1993. This embodied the general principle of prohibiting further consumptive abstraction from the area’s principal aquifers. In addition, the 1991–92 drought showed how the Lower Greensand aquifer and the Hastings Beds (particularly the Ashdown Sand layer within the Hastings Beds) were vulnerable to lack of winter rainfall and were taking longer to recover from drought. As a result in 1993, these aquifers were also included in this policy. Within the revised 1993 Groundwater Policy we introduced an ‘Antecedent Winter Rainfall Condition’ which is explained below.

Licence Strategy for new and varied licenses:

Groundwater Abstraction:

Chalk Groundwater – There continues to be a “presumption against” the granting of licenses for abstraction from the Chalk for unconstrained consumptive-use. Any new or varied licence will most likely have a ‘Groundwater Level Condition’. We would also seek to secure downward variations of existing licenses, by using the criteria for the renewal of time limited licenses.

Lower Greensand and Hastings Beds Groundwater - There remains a “presumption against” further unconstrained consumptive abstraction from the Lower Greensand aquifers and Hastings Beds Aquifers, this formation comprises of the Tunbridge Wells Sands and Ashdown Beds. Any new or varied licence will most likely have an ‘Antecedent Winter Rainfall Condition’. This states that the total volume of abstraction authorised for any water year (12 months from October 1st) will be dependent on antecedent (or previous) winter rainfall. For clarification, this can be exemplified as follows:

- If 100% of the long term average rainfall (1961–1990) is recorded (during the previous winter) then 100% of the annual quantity may be abstracted

- If 75% of the long term average rainfall is recorded then 75% of the annual quantity may be abstracted
- If 50% of the long term average rainfall is recorded then 50% of the annual quantity may be abstracted
- The maximum reduction will be 50% of the annual quantity

This condition allows the usage of any new or varied groundwater abstraction from this aquifer to be carefully managed in any one year. We will notify abstractors before 1 May of each year of the preceding total winter rainfall and the permitted abstraction volume.

In some cases more sophisticated assessments of groundwater recovery may be used which represent actual groundwater storage rather than potential recharge based on actual rainfall. These will be represented by groundwater recovery levels.

The “presumption against” granting of licenses for abstraction from the Tunbridge Wells Sands and Ashdown Beds which adversely affects the flow regime of headwater streams draining the outcrop will often be where the abstraction point is in close proximity to a watercourse.

Heavily Modified Water Bodies (HMWB)

These water bodies can be classified for many reasons, but for water resources they are classified if they may contain a lake and/or reservoir that influence the downstream flow regime of the river. The downstream ‘flow modified’ water bodies are also classified as heavily modified. They are designated for water resource purposes if the flow regime has been altered by flow regulation.

Much of the River Teise is classified as a heavily modified water body, see Licence Strategy Map 2, this is largely due to the Medway scheme. The Medway scheme is a strategic Public Water Supply pumped storage and reservoir transfer facility based on the Bewl Reservoir located on the headwaters of the River Teise near Lamberhurst. This scheme serves 500,000 people in the Medway towns and West Kent. Water is abstracted at various intakes along the river and pumped to Bewl Reservoir and stored. This water is subsequently released back into the river to support abstraction to supply downstream pumping stations at times of low flow in the Medway. Another part of this scheme involves the transfer of water from Bewl Water to Darwell reservoir in the Rother catchment. Without the Bewl-Darwell scheme in place there is a real and immediate risk that such customer restrictions would have to be applied more frequently.

Important local features that may affect water availability

European law provides a very high level of protection to two types of designated sites due to their special environment. These are:

- Special Areas of Conservation (SAC), which contribute to biodiversity by maintaining and restoring habitats and species;
- Special Protection Area (SPA), which provides protection to birds and their nests, eggs and habitats

Ramsar sites and Sites of Special Scientific Interest (SSSI) also carry a high level of environmental importance. Further information can be found in Section 4.5 – Restoring Sustainable Abstraction.

The principal area of international conservation importance is the Ashdown Forest designated as a SSSI, SPA and SAC. The Ashdown Forest is one of the longest single continuous blocks of valley bog in south-east England. It is therefore important to ensure that there is sufficient spring flow from the underlying Hastings Beds to maintain the ecological value of this site.

The Thames Estuary and Marshes and the Medway Estuary and Marshes, within the Medway CAMS area, are designated as SSSI, SPA and Ramsar sites. The complex mosaic of habitats and species found within these designations are influenced by freshwater flows and may be vulnerable to groundwater abstraction. The River Beult is the only riverine SSSI in Kent. It was notified as a SSSI in 1994 because it is regarded as an outstanding example of a clay river, outside Central England (the normal distribution for this river type), that has retained characteristic flora and fauna and a relatively natural course. Flow is maintained during dry periods by weirs and pen boards, which result in some stretches of slow flow. The citation extends from Smarden to the Medway confluence, a total length of almost 25km. The Beult is classified as ‘unfavourable recovering’, water quality has improved since 2005 especially phosphate levels, but still remains Poor ecological status due to high diatom levels, low dissolved oxygen and high phosphate levels, with abundant duckweed growth recorded. Pesticide levels are also higher than desirable and may be having impacts on invertebrates. Significant investment has been made to improve water quality and all AMP3 and AMP4 improvements are in place.

Other water dependent SSSIs within the CAMS area are sensitive to changes in water levels and flow, these are highlighted in Map 1.

The Medway catchment supports some aquatic priority habitats and species for conservation listed under the UK Biodiversity Action Plan (BAP), many of which are afforded protection under the Wildlife & Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, & c.) Regulations 1994 and subsequent Conservation of Habitats and Species Regulations 2010. These habitats and species are potentially vulnerable to changes in water level and river flows associated with abstraction.

4.2.3 Estuaries/coast

The Medway tidal waters flow into the wider Thames tidal estuary; there are no assessment points in the estuary.

The North Isle of Grain under map 2 shows water available 95% of the time, this is not a true reflection of water resources in the area, mainly due to us not having any Assessment Points in the locality. These marshes are one of the driest areas in Kent in terms of rainfall, even in the winter months there are very low outflows from the marshes due to the limited spring baseflow from the Chalk. During the Summer months there is little ability to retain much water and is vulnerable to drought as it is difficult to maintain a flow all year round. Any future licence determinations would have appropriate conditions such as winter storage reservoirs and local water level conditions to protect the marshes & estuary habitats.

4.3 Opportunities for licence trading

We want to make it easier to trade water rights. A water rights trade is where a person sells all or part of their water right, as defined by their abstraction licence(s), to another person on a permanent or temporary basis. In the majority of cases a trade will involve a change in abstraction location and/or use which we will need to approve through the issue or variation of abstraction licences.

In licensing trades, as with new abstraction licences, we need to make sure that we do not cause any deterioration in WFD water body status both within the water body / bodies where the trade will take place or to downstream water bodies. The table below provides a guide to the potential for trading in water bodies of a particular CAMS water resource availability colour, as shown on map 3.

CAMS water resource availability colour, including downstream requirements	Our approach to trading
High hydrological regime	Opportunities for trading water rights will be limited
Water available for licensing	Allow trades of recent actual abstraction and licensed abstraction, but little demand for trading expected within water body as water available for new abstractions.
Restricted water available for licensing	There may be opportunities for licence holders to trade up to their full licensed quantities, but the quantities of water available to trade may be restricted once levels of actual abstraction reach sustainable limits
Water not available for licensing	We will only trade recent actual abstraction but no increase in recent actual abstraction is permitted in water body. Licensed abstraction will be recovered for the environment.

CAMS water resource availability colour, including downstream requirements	Our approach to trading
HMWBs	Opportunities for trading will depend on local operating agreements and local management.

To find out more about licence trading please go to our [website](#).

4.4 New Authorisations

The Water Act 2003 brought all significant water abstraction under licensing control. This will result in trickle irrigation, dewatering of mines, quarries, engineering works and construction sites, abstractions related to Internal Drainage Districts, navigation abstraction and abstraction for ports and harbour authorities and other local exemptions coming into the licensing regime.

As a result we'll be able to manage water resources more effectively by ensuring that all significant activities influencing the availability of water and its impact on the environment are undertaken in a sustainable manner.

Government are still developing their policies as to how to resolve some of the issues raised during the consultation process. Government will publish their proposals before new regulations are implemented and expect to do this at least 3 months before commencement so that we can issue guidance to those affected by the changes.

Where we have details of these abstractions we have included them in our assessments to consider how they impact on the catchment.

Within the Medway catchment trickle/drip irrigation is a significant pressure with high concentrations of trickle occurring within the centre of the catchment and along the River Beult. It is estimated during the summer months a total of 25 Ml/d is abstracted for trickle/drip irrigation from both ground and surface water sources which nearly accounts for 45% of all irrigation in the catchment.

4.5 Restoring Sustainable Abstraction

Where water abstractions cause or potentially cause actual flows to fall short of the EFIs and result in environmental damage, we may need to change or even revoke existing abstractions in order to achieve a sustainable abstraction regime. Within the Medway CAMS there are 8 water bodies in which recent actual flows are not sufficient to support their ecology. The abstraction licences within these water bodies that cause these issues are being investigated. Investigations into the impact caused by these licences, individually or cumulatively, may result in options being developed with licence holders on how to improve sustainability. Information on how licences in the RSA programme are dealt with can be found in our [Step by Step guide](#) on our website.

Investigation Water Framework Directive Water bodies.

In addition to the RSA programme, we are investigating whether reduced water flow may be causing problems under the Water Framework Directive (WFD). About four per cent of rivers are failing to support WFD good ecological status due to pressures from over-abstraction.

Habitats Directive

Under the Habitats Regulations we have assessed the effects of existing abstraction licences and will assess new applications to make sure they are not impacting on internationally important nature conservation sites. These sites are known as Special Areas of Conservation (SAC's) and Special Protection Areas (SPA's). If your current licence has been reviewed under this legislation to assess its impact you will already know about the review. If we haven't contacted you yet then your licence is either not near a SAC/SPA or isn't having an impact on these sites. If our assessment shows that a new application could have an impact on a SAC/SPA we have to follow strict rules in setting a time limit for that licence. These are:

- we may be able to grant the licence but only with a short time limit. This allows us to monitor the impact of the abstraction on a SAC/SPA and change the licence if necessary;

- if we can't determine that your application will not affect the site we have to either put conditions on the licence so that it cannot affect the site or refuse the application. If we grant the licence we may ask you to monitor its impact;
- if our assessment shows that there isn't an impact on the site we will manage the application according to the principles in this document.

Thank you for taking the time to read this Licensing Strategy. If you have any questions about it, or if you want to apply for an abstraction licence or make changes to a licence that you already have, then please contact us:

- by telephone on 03708 506 506
- by email at enquiries@environment-agency.gov.uk
- or visit our website at www.environment-agency.gov.uk or our [Abstraction Licensing](#) web page [Back](#)

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.
Assessment Point Unit	Point at which the flow from upstream catchment is assessed.
Catchment	The area from which precipitation and groundwater will collect and contribute to the flow of a specific river.
Consumptive abstraction	Abstraction where a significant proportion of the water is not returned either directly or indirectly to the source of supply after use. For example for the use of spray irrigation.
Discharge	The release of substances (i.e. water, sewage, etc.) into surface waters.
Environmental flow indicator	Flow indicator to prevent environmental deterioration of rivers, set in line with new UK standards set by UKTAG.
Full licence	A licence to abstract water from a source of supply over a period of 28 days or more
Groundwater	Water that is contained in underground rocks.
Hands off flow	A condition attached to an abstraction licence which states that if flow (in the river) falls below the level specified on the licence, the abstractor will be required to reduce or stop the abstraction.
Hands off level	A river flow or borehole (groundwater) level below which an abstractor is required to reduce or stop abstraction.
Impoundment	An impoundment is a structure that obstructs or impedes the flow of inland water, such as a dam, weir or other constructed works.
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.
Transfer licence	A licence to abstract water from one source of supply over a period of 28 days or more for the purpose of; <ol style="list-style-type: none"> 1. transferring water to another source of supply; or, 2. transferring water to the same source of supply, but at another point, in the course of dewatering activities in connection with mining, quarrying, engineering, building or other operations (whether underground or on the surface); <p>without intervening use.</p>
Water body	Units of either surface water or groundwater at which assessments are completed for WFD.

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List of abbreviations

AMP	Asset Management Plans
AP	Assessment Point
ASB	Abstraction Sensitivity Bands
AWB	Artificial Water body
CAMS	Catchment Abstraction Management Strategies
CED	Common End Date
Defra	Department of Environment Fisheries and Rural Affairs
EA	Environment Agency
EFI	Ecological Flow Indicator
FL	Full Licensed (scenario)
GEP	Good Ecological Potential
GES	Good Ecological Status
GW	Groundwater
HES	High Ecological Status
HMWB	Heavily Modified Water Body
HoF	Hands off Flow
HoL	Hands off Level
LDE	Level Dependent Environment
MI/d	Megalitres per day
maOD	Metres above ordnance datum
Q95	The flow of a river which is exceeded on average for 95% of the time.
RA	Recent Actual (scenario)
RSA	Restoring Sustainable Abstraction
RBMP	River Basin Management Plans
SAC	Special Areas of Conservation
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
SW	Surface water
UKTAG	United Kingdom's Technical Advisory Group
WB	Water body
WFD	Water Framework Directive
WRGIS	Water Resources Geographical Information System

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