North Kent & Swale Abstraction Licensing Strategy

February 2013

A licensing strategy to manage water resources sustainably

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ea/br/e/std/v1

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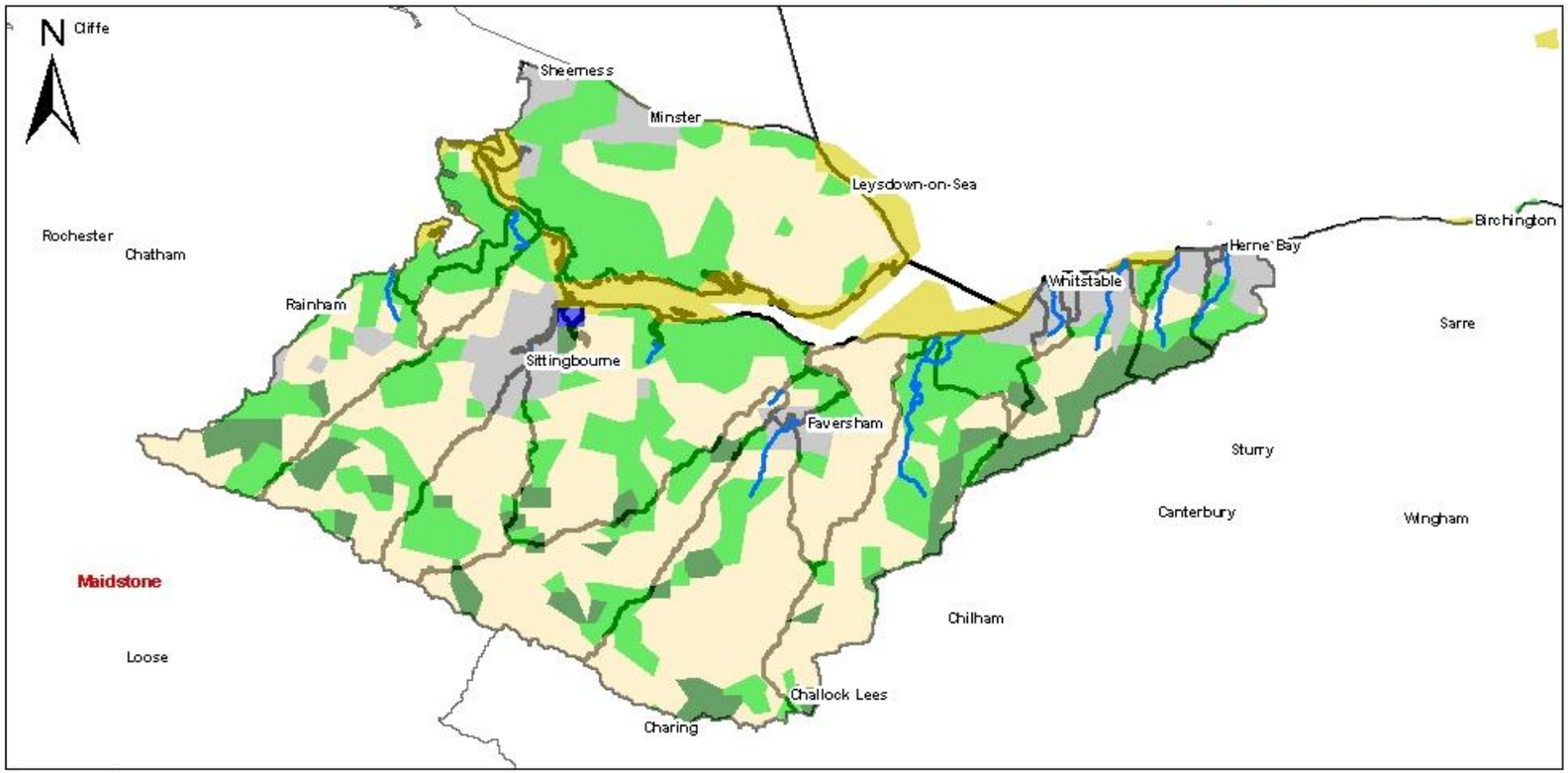
Map 1 North Kent & Swale CAMS (Catchment Abstraction Management Strategy) area

North Kent & Swale CAMS Area



Legend

- Rivers
- Arable
- Managed Grassland
- Forestry / Woodland
- North Kent CAMS APs
- Semi Natural Vegetation
- Urban
- Water
- North Kent CAMS WBs

Kilometres
0 1.5 3 6 9 12

Creation date 30th November 2012

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 & South London Area Manager

Contents

1. About the Licensing Strategy

This **Licensing Strategy** sets out how water resources are managed in the North Kent & Swale 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 North Kent (February 2013 and it supersedes the original Catchment Abstraction Management Strategy issued in 2004.

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 20m^3/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 North Kent & Swale 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 principles 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.

2. North Kent & Swale CAMS area

The North Kent catchment is predominantly rural with agricultural land, comprising of arable, grassland and intensive horticulture of orchards, and hops. The principal towns of this area are Sittingbourne, Faversham, and Sheerness, as well as coastal towns of Whitstable and Herne Bay. There has been considerable urban development mainly around Sittingbourne and Sheerness as these fell under the Thames Gateway, and smaller quantities in Faversham, Whitstable and Herne Bay. Industries in this area consist of Paper mills, Port activities, and a Brewery.

The most important aquifer in this catchment is the Chalk, which is designated as a principal aquifer. Groundwater moves along fractures and fissures that have been subject to dissolution and weathering. The confined Chalk lies to the Northern part of the catchment and extends under the Isle of Sheppey beneath the impermeable deposits of London Clay. The Chalk is overlaid by two major drift deposits, clay with flints and head deposits. These drift deposits do not seem to restrict infiltration of rain into ground, but may act as stores delaying the downward movement of rainwater reaching the Chalk.

The Lower London Tertiaries are a group of secondary aquifers with variable deposits of sand, silt and clay which overlay the Chalk. Secondary aquifers characteristically have a wide range of permeability and storage values and can be sub divided into Secondary A or B. The Lower London Tertiaries group includes the Thanet Sand Formation, the Lambeth Formation, and the Harwich Formations. In certain places the Thanet Sands can be in hydraulic continuity with the Chalk but this may vary depending on the geology. The Tertiary group plays an important role of its influence on the presence of spring flow to the grazing marshes and saline mudflats.

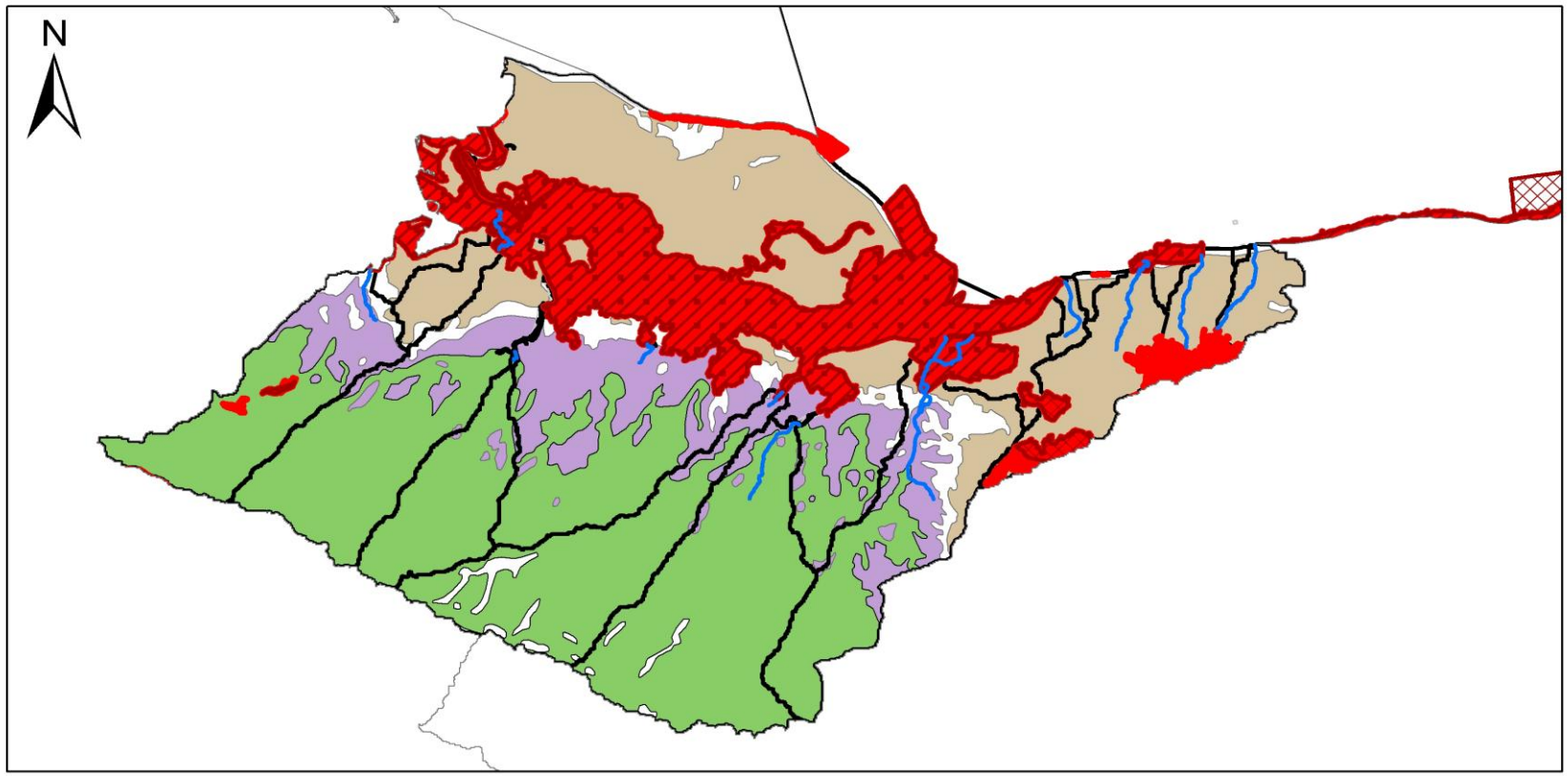
The fluvial network in this area is not characterised by a distinctive river, instead by spring-fed and surface-fed streams. These flow across the low-lying land of the Swale/Medway Marshes and into the Swale estuary. The Chalk and the Tertiaries provide a significant source of baseflow to the spring-fed streams, and surface-fed streams are reliant on rainfall.

The marshes along the North of the CAMS area are managed according to water level rather than flow. General practice is to keep water levels high in the marshes during the summer to allow for wet fencing or for abstraction to take place from ditches and streams. In the winter levels are kept low to reduce flood risk. This is carried out by Water Level Management Plans from which the IDB manage and operate the levels in this area,

Approximately, 90% of the total licensed groundwater abstraction comes from the Chalk aquifer. Most of these abstractors are concentrated in the southern part of the unit, where boreholes are located in the dry valleys. Surface water abstractions generally occur in the northern part of the unit.

Map 2 shows the geology and designated sites within the North Kent & Swale catchment

Geology & Designated Sites within North Kent & Swale CAMS



Legend

- Rivers
- North Kent CAMS Water Bodies
- SACs
- SPAs
- RAMSAR
- SSSIs
- London Clay
- Thanet Sand Formation
- Seaford Chalk Formation

Kilometres
0 1.252.5 5 7.5 10

Creation date 30th Novermber 2012

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3. Water resource availability of the North Kent & Swale 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, rainfall 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 3 Water resource availability colours for North Kent & Swale 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 will 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. A river may also be heavily supported by flows from a reservoir and may have unnaturally high 'low' flows which means that the river environment is most vulnerable at medium flows.

Table 1 Implications of water resource availability colours

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.

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.

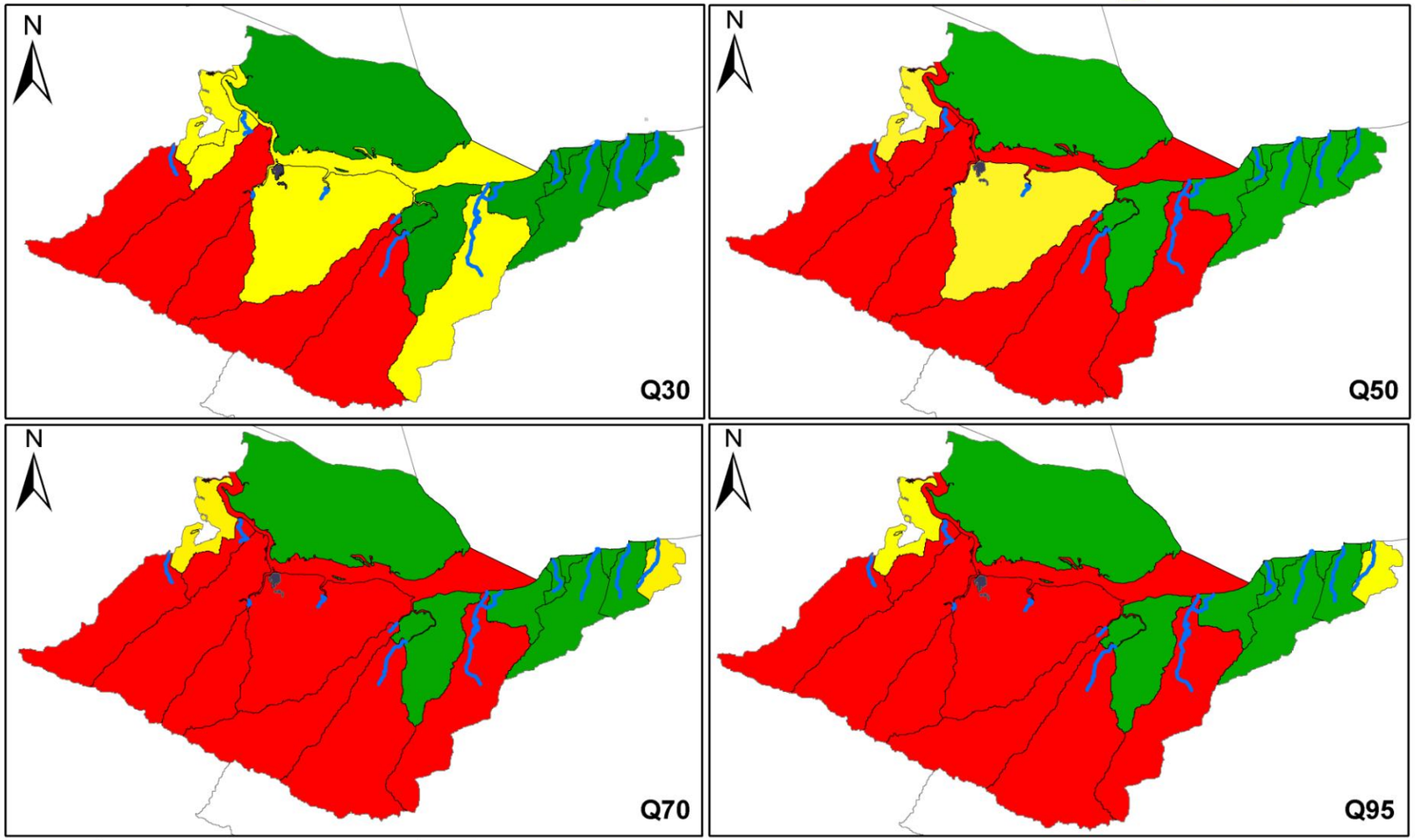
Please refer to section 4.2.2 for further information

Map 3 shows the water resource availability colours in the North Kent & Swale area. The same availability is applied to groundwater and surface water.

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	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. 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. In other units there may be restrictions in some areas e.g. in relation to saline intrusion
Water not available for licensing	Groundwater unit balance shows more water has been abstracted based on recent amounts than the amount available. No further consumptive licences will be granted.

Map 3 Water resource availability colours for North Kent & Swale CAMS

North Kent CAMS
Downstream Resource Colours



Legend

- Water available for licensing
- Restricted water available for licensing
- Water not available for licensing

Creation date November 2011

- CAMS Water Bodies
- Heavily Modified and Artificial Lakes
- Heavily Modified and Artificial Rivers
- Main Rivers
- CAMS APs

0 2 4 8 12 16 Kilometres

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We have defined and assessed a number of Management Units within this Water Framework Directive (WFD) Management Area. The information from the assessments on these units determines water availability and licence restrictions.

As a groundwater dominated catchment, geology plays a crucial role in water availability. It is believed the North Kent Tertiaries are in hydraulic continuity with the North Kent Swale Chalk supporting groundwater levels in the Thanet sands. However, the extent of continuity between these two aquifer units is unknown and the variability will be determined by the presence of clay bands acting as effective aquitards. The extent and thickness of the clay is uncertain in many places and under WFD it was decided that the effectiveness of these clay bands acting as an aquitard is inconclusive. This removed the assumption of several Chalk and Tertiary distinctive units. For this reason, the groundwater aquifers are not distinctively separated from each other and the Tertiaries and Chalk will be treated as one aquifer unit.

The London Clay, which is the surface geology of the northernmost parts of mainland Kent and all of the Isle of Sheppey, is classed as unproductive strata and so does not represent a groundwater body.

This unit is dominated by Water Company abstractions and a smaller number of industrial abstractors. Industrial abstractors have decreased since the seventies, with the scaling down of the pharmaceutical, paper and cement production. There are greater concentrations of Public Water Supply (PWS) abstractors near Gillingham. All PWS abstract from the Chalk aquifer, and has the potential to impact on the overlying Tertiaries, which are or partially in hydraulic continuity.

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.

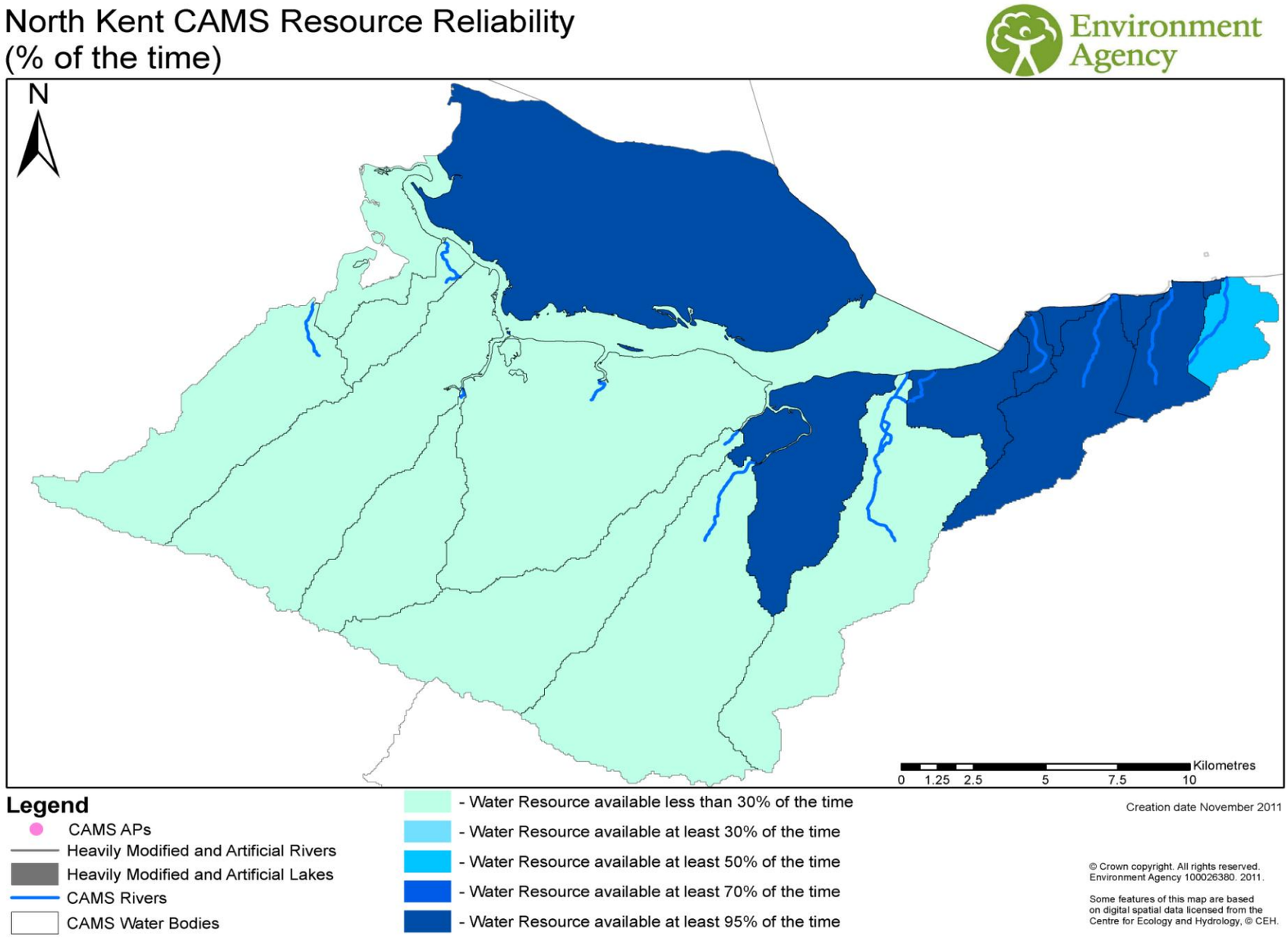
The availability of water for abstraction within a river varies greatly from high to low flows. By assessing the quantity of water available at different flows it is possible to see when there is a surplus or deficit of water and the associated reliability of an abstraction. This is an indication only; 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 North Kent & Swale area expressed as percentage of time.

Table 2 Percentage reliability of consumptive abstraction.

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

Map 4 Water resource reliability expressed as percentage of time available.



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4. How we manage abstractions in the North Kent & Swale 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 North Kent & Swale 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 20m^3/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 will determine each application upon its own merits and any local impacts.

A licence does not guarantee that water is available

It is 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 will 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 (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 School benchmarks**

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 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.

11% of the licences in North Kent & Swale CAMS are time-limited. CEDs occur every twelve years.
The next CED for North Kent & Swale CAMS is 2023 and the subsequent one is 2029.

Additional information about the replacement of time limited licences is available in Managing Water Abstraction.

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'.

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.

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. In this catchment it would be more appropriate for a local hands off level will be applied to Level Dependent areas.

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.

The North Kent & Swale area has no river assessment points, as it has no distinctive watercourses running through it, and therefore cannot be assessed in the same way as natural flowing rivers in other catchments. Instead, there are spring-fed and surface-fed streams that flow across the low lying land of the Swale/Medway Marshes into the Swale Estuary. Many of these streams depend on groundwater levels, so changes in water abstraction from the North Downs Chalk aquifer and the overlying permeable deposits (Lower London Tertiaries) affect stream flow. The river channels in this catchment are measured on levels rather than flows, as the water moves very slowly and is heavily managed. The water level is carefully managed by a series of water control structures such as stop boards, overflow weirs flood relief sluices and tidal outfalls. A series of Water Level Management Plans (WLMP) have been written either by the Internal Drainage Broad or by the Environment Agency, to ensure all users have suitable levels for their needs. For further information see section 4.2.3 Level Dependent Environments.

4.2.2 Groundwater

The majority of groundwater abstractions points are located along the dry valleys, which were formed during peri-glacial conditions. The yield from boreholes sited in the base of the valley [fluvial] tend to be higher, due to more favourable structural controls and in particular a higher frequency of fissures and fractures that in turn lead to higher rates of transmissivity and storativity. These dry valleys often give rise to springs close to the interface with the overlying Thanet Sands, which occupies the flatter, lower lying land of the marshes in the north of the area.

North Kent & Swale CAMS area has numerous springs (where surface is intersected by the groundwater table) emerging from the base of the North Downs between Gillingham and Whitstable. The spring outflow discharges into several distinct marsh systems. These springs are often referred to as the 'North Kent Springs' and are recognised as important feeder streams, to marshes and estuary.

As previously discussed, in section 3.2.2, on principal aquifers, we have divided the area into management units. We use the information and assessments on these units to determine water availability and licence restrictions.

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 North Kent & Swale CAMS the groundwater principal aquifer licensing strategy remains in place.

Groundwater - Principal aquifer licensing strategy - There has been a "presumption against" further 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 unconstrained consumptive abstraction from the area's principal aquifers

Groundwater Licensing Strategy for New and Varied licences

There continues to be a 'presumption against' the granting of licenses for abstraction from the Chalk and Tertiaries for consumptive-use. Restrictions to licenses will be considered on an individual basis site specifically to determine if a licence will be successful.

Any new licence issued will most likely have groundwater level or flow conditions applied to ensure the abstraction is sustainable.

Existing abstractors that are causing an impact on the environment will be dealt through our Restoring Sustainable Abstraction programme.

Catchment Wide Policies

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".

4.2.3 Level Dependent Environment

The North Kent & Swale CAMS contains level dependent environments. We have divided the area into units, known as level dependent management units. We have completed an assessment on each of these units.

These are a network of drainage ditches with extremely low flow rates, often ponded. These remove water from low-lying land during the winter, and in the summer provide a resource for irrigation and wetland habitats, during which time the ditches are topped up from surface water sources when available.

All applications for abstraction licences within these level dependent environments will be assessed on an individual basis. Despite the water balances showing water available, this does not determined the amount of water available. These resources are very limited and are heavily stressed during the summer.

There are four distinctive level dependent management units (see map 5) that have been sub-divided depending whether they are fed by groundwater sources via springs or rainfall dependent. The units are as follows:

Iwade – Rain Fed
Status – Water available

Iwade water balance is similar to Sheppey, by the fact it tends to have high run-off from rainfall and cannot retain much water in the summer, making it 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 level controls.

Sheppey – Rain fed
Status – Water available

Sheppey is similar to Iwade. The Sheppey catchment is dependent on rainfall and not groundwater sources, therefore makes the catchment vulnerable to drought conditions.

Teynham – Spring fed
Status – Water available

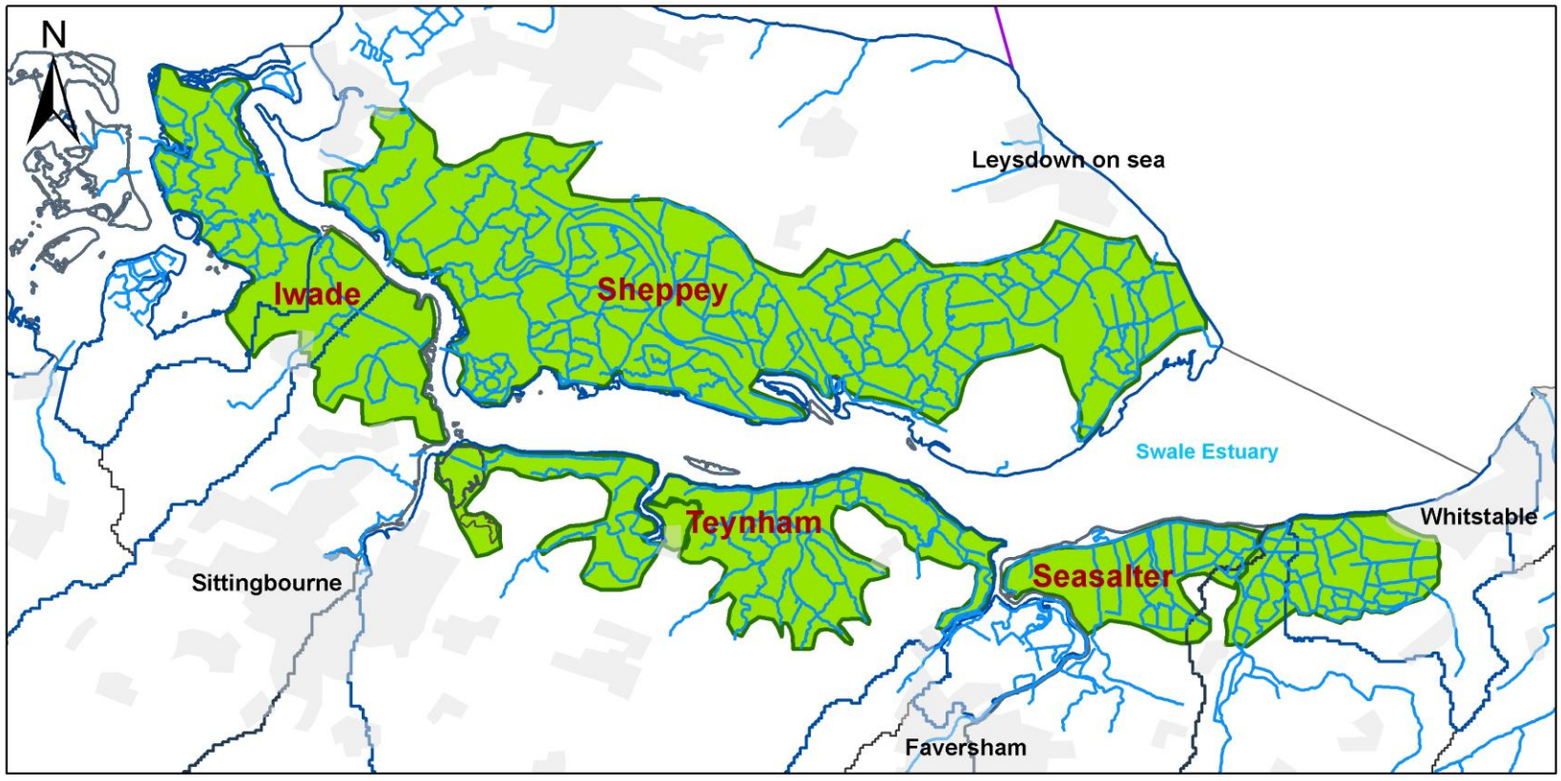
This unit tends to be wet all year round as these marsh areas are dependent on groundwater seepage. The Osiers Stream receives baseflow from the Chalk aquifer and flows into the Teynham Levels. The unit is vulnerable to drought when springs feeding this unit dry up.

Seasalter – Spring fed
Status – Water available

The inflows into the Seasalter marsh are the Fairbrook stream and direct runoff from the London Clay Hills to the south and east and it receives baseflow from the Thanet Sands. The White Drain experiences low flows impacting on the biological quality. The headwaters near Boughton are susceptible to abstraction, as the flow plays an important part in diluting the diffuse discharges that affect the White Drain.

Map 5 Level dependent environments in the North Kent & Swale CAMS

North Kent & Swale CAMS
Level Dependent Environments



Legend

- Rivers
- CAMS Water Bodies
- Level Dependent Environments

Creation date 22 February 2013

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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 Swale and the Medway marshes within the CAMS area are designated as National Nature Reserve, SSSI, SPA and Ramsar site. The Swale Estuary is a 13 mile channel that separates the Isle of Sheppey from mainland Kent. The Swale marshes are a complex eco-system with continuous fluctuation from the mixing of fresh water and saltwater making this an ideal habitat for migratory, overwintering, and breeding wetland birds. The main priority habitats are a complex of brackish and freshwater grazing marsh (the largest area in Kent). The marshes are managed through the manipulation of water levels and livestock grazing, making them vulnerable to groundwater abstraction.

Majority of the land in and around the Swale coasts consists of priority habitats and species listed under the UK Biodiversity Action Plan (BAP). Many of these are afforded protection under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. These priority habitats, such as saltmarsh, saline lagoons and species (including water voles, tasselweeds) are susceptible to changes in water levels and river flows associated with abstraction.

4.2.4 Estuaries/coast

There is no distinctive river, the spring-fed and surface-fed streams that flow across the low-lying land of the Swale/Medway marshes discharge into the Swale Estuary. There are no assessment points in the estuary.

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.
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.

Within the North Kent & Swale catchment trickle/drip irrigation is a significant pressure with high concentrations of trickle occurring within the Sittingbourne, Faversham and Selling Chalk catchment. The precise number of trickle irrigators within this area is unknown. This activity is currently exempt from licensing and the Environment Agency has no statutory requirement to hold records. The source of abstraction is generally from the Tertiaries. However, the magnitude of abstraction is lower than that of Water Companies; they still have the potential to impact on groundwater dependent ecosystems.

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 North Kent & Swale CAMS there are 5 water bodies in which recent actual flows have fallen below the EFI. The abstraction licences within these water bodies that cause these issues are being investigated as part of the RSA programme. Investigations into the impact caused by these licences, individually or cumulatively, will result in options being developed with licence holders on how to improve sustainability. Investigations will include a cost/benefit analysis. 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.

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; 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); without intervening use.
Water body	Units of either surface water or groundwater at which assessments are completed for WFD.

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
Ml/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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Call us on
08708 506 506* (Mon-Fri 8am-6pm)

email
enquiries@environment-agency.gov.uk

or visit our website
www.environment-agency.gov.uk

incident hotline 0800 80 70 60 (24 hours)
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