Wharfe and Lower Ouse Abstraction Licensing Strategy

February 2013

A licensing strategy to manage water resources sustainably

Reference number/code LIT 7869

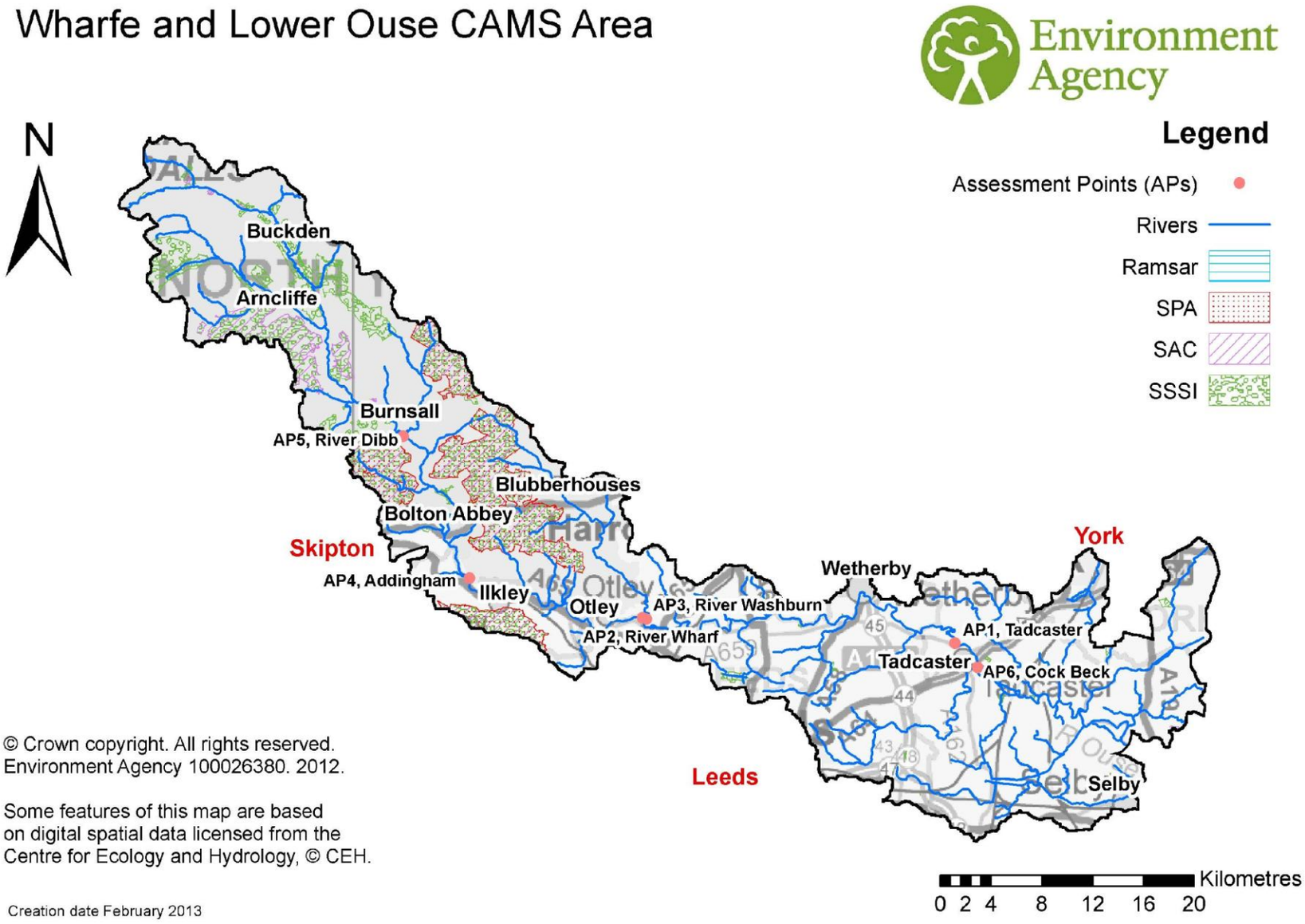
We are the Environment Agency. It's our job to look after your environment and make it **a better place** - for you, and for future generations.

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

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

Published by:

Environment Agency
Horizon House
Deanery Road
Bristol BS1 5AH
Tel: 0370 8506506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

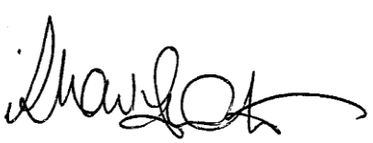


Map 1 Wharfe and Lower Ouse CAMS (Catchment Abstraction Management Strategy) area

Foreword

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

This licensing strategy sets out how we will manage water resources in the Wharfe and Lower Ouse catchment and provides you with information on how we will manage existing abstraction licences and water availability for further abstraction.



Mark Scott Yorkshire Area Manager

Contents

Map 1 Wharfe and Lower Ouse CAMS area 2

1. About the Licensing Strategy..... 5

2. Wharfe and Lower Ouse CAMS area 7

3. Water resource availability of the Wharfe and Lower Ouse area 8

4. How we manage abstractions in the Wharfe and Lower Ouse area 14

Glossary of terms..... 25

List of abbreviations 26

1. About the Licensing Strategy

This **Licensing Strategy** sets out how water resources are managed in the Wharfe and Lower Ouse 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 Water Framework Directive (WFD)

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 20 cubic meters (m^3) (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 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 Wharfe and Lower Ouse 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. Wharfe and Lower Ouse CAMS area

Map 1 shows the Wharfe and Lower Ouse catchment.

The Wharfe and Lower Ouse CAMS encompasses an area of approximately 1,348km² of North and West Yorkshire and is defined using the natural hydrological boundaries and catchment watersheds of the main rivers. The catchment boundary includes all the land from which precipitation and surface run-off drains into the River Wharfe and its tributaries.

The River Wharfe rises in the Northern Pennines, and is formed at the confluence of Oughtershaw and Langstrothdale Becks. This upper reach is characterised by the limestone scenery and rocky outcrops of the Yorkshire Dales National Park. Downstream the River Wharfe is joined by the River Skirfare, and flows into a narrow valley and the town of Grassington. The River Wharfe is then joined by the River Dibb, and flows towards Bolton Bridge and Addingham. After Addingham the valley is wider and the landscape more undulating. The River Wharfe flows east through the towns of Ilkley and Otley before being joined by the River Washburn. The River Wharfe is wide and shallow as it flows through the towns of Wetherby and Tadcaster, where it becomes tidal. The Wharfe is then joined by Cock Beck before entering the tidal River Ouse.

Due to the size of the catchment and its topography, rainfall and climatic conditions can vary across the CAMS area. Annual rainfall totals range from 600mm at Cawood to 2000mm near the source of the River Wharfe in the Pennines. There is effective rainfall in the Pennines all year round, and the steep, narrow valley sides can cause the rivers to rise quickly in response.

Within the Wharfe and Lower Ouse CAMS area there are seven reservoirs divided between the three largest tributaries. Upper and Lower Barden Reservoir are located on the tributary of Barden Beck, Grimwith Reservoir is located on the River Dibb, and Thruscross, Fewston, Swinsty and Lindley Wood Reservoirs are located on the River Washburn. Flows are increased on the River Wharfe between the River Dibb confluence and Addingham due to releases from Grimwith Reservoir to support the downstream public water supply abstractions.

There is a wide variation in topography reflecting changes in the underlying geology. Much of the upland area is over 500m above sea level, reaching a maximum height of 694m above sea level. Upper Wharfedale is characterised by the limestone scenery of pasture and rocky outcrops, and the valley is generally narrow and steep sided with a flat valley floor. Further to the east the land becomes more low-lying and the landscape is more undulating with a wider valley floor gradually dropping to less than 20m above sea level where the River Wharfe becomes tidal at Tadcaster.

The rocks range in age from Carboniferous (c.360 million years ago) to Triassic (c.248 million years ago). The oldest formations lie to the west and comprise the Carboniferous Limestone and Millstone Grit. Across most of the CAMS area, drift deposits are thin or absent. Scattered patches of boulder clay, sand, gravel, and silt provide limited protection to the underlying Sherwood Sandstone and Magnesian Limestone aquifers.

The Wharfe and Lower Ouse CAMS area is generally rural with small, scattered settlements. The more densely populated urban areas include Ilkley, Otley, Wetherby, Tadcaster and Selby. Generally, the population is concentrated here, with significant industry in the south of the catchment. The middle to lower reaches of the Wharfe Valley are dominated by mixed farming. The Pennine uplands and the Yorkshire Dales National Park dominate Upper Wharfedale. The exposed moorlands have little agricultural value and are used primarily for sheep grazing.

There are several cross catchment transfers that remove water from the rivers and reservoirs and transfer it to other catchments in West Yorkshire. Most of the of abstracted water is used in industry and the largest single consumptive abstraction is for public water supply. The rivers are also used for a variety of recreation and leisure activities including canoeing and angling.

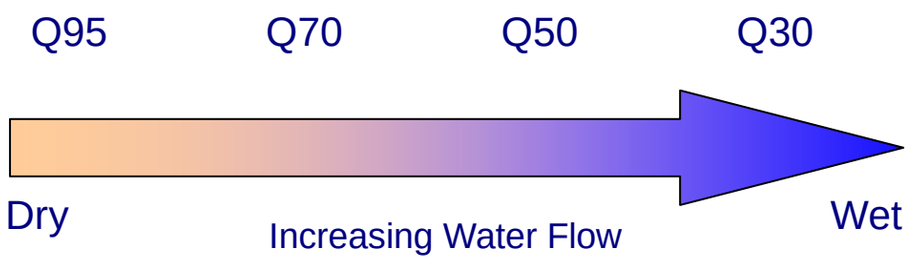
3. Water resource availability of the Wharfe and Lower Ouse area

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). Low flows (Q95) reflect very dry conditions and high flows (Q30) reflect very wet conditions.



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.

Map 2 shows the water resource availability for the Wharfe and Lower Ouse CAMS area at the four different flow values.

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. 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.

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	Fully 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 water is available for further licensing at low flows. Water will be available at higher flows with appropriate restrictions. 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). Water may be available for further licensing at high flows with appropriate restrictions. 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 surface water resource availability colours

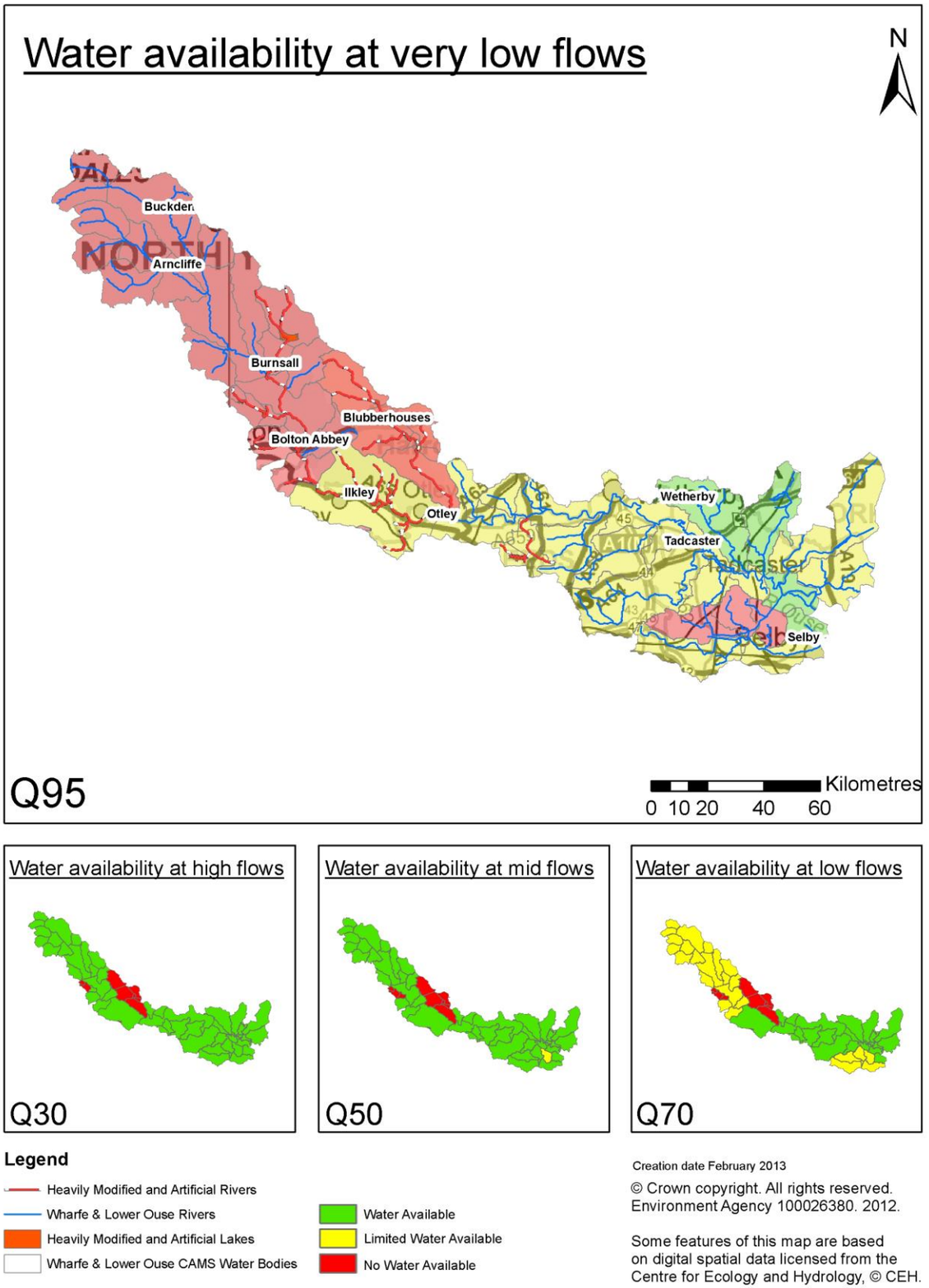
3.2.2 Groundwater

Groundwater availability is guided by the surface water resource availability colours unless we have better information on principle aquifers or are aware of local issues we need to protect. Water availability is different for groundwater and surface water in the Wharfe and Lower Ouse CAMS area. Please refer to section 4.2.2 for further information.

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 abstraction may cause local impacts likely to occur on water dependent habitats, groundwater levels or cause intrusions. In restricted groundwater units licences will be issued on a case by case basis. Conditions may be applied to licences that link the groundwater abstraction to surface water flows and restrictions. Surface water availability may override groundwater availability. In other units there may be restrictions in specific areas e.g. in relation to saline intrusion. It may be appropriate to investigate the possibilities for reducing fully licensed risks. Water may also 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	Groundwater unit balance shows more water has been abstracted based on recent amounts than the amount available. No further consumptive licences will be granted.

Table 2 Implications of groundwater resource availability colours

Map 2 Wharfe and Lower Ouse CAMS
Resource Availability Colours



Creation date February 2013

Map 2 Water resource availability colours for the Wharfe and Lower Ouse CAMS

3.2.3 About Map 2 Wharfe and Lower Ouse CAMS Resource Availability Colours

Map 2 shows the water resource availability for the Wharfe and Lower Ouse CAMS area at the four different flow values. Because flows in water bodies vary over time we have tried to show how water resource availability also varies. Map 2 shows this variability and how we are likely to apply restrictions, such as HOFs, to licences.

The largest map, Q95, shows where water is available at very low flows, for instance during dry periods. This represents water resource availability for 5% of the time – most of the time there is more water available than this. Q95 is when there is the least water available for consumptive use and shows where restrictions on licences come into force. Red coloured areas are those where we need licence-holders to stop abstracting at very low flows in order to protect the natural environment and other abstractors further downstream.

Gradually as the flows increase towards Q30, more water is available and can be licensed without risking ecological damage. The resource availability of water at Q30 shows what the situation is for about 30% of the time at high flows, such as when there has been a lot of rainfall. Most of the time there is less water available than this. Certain licences only allow abstraction at high flows, so in some areas there may actually be less water available when flows are high.

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.

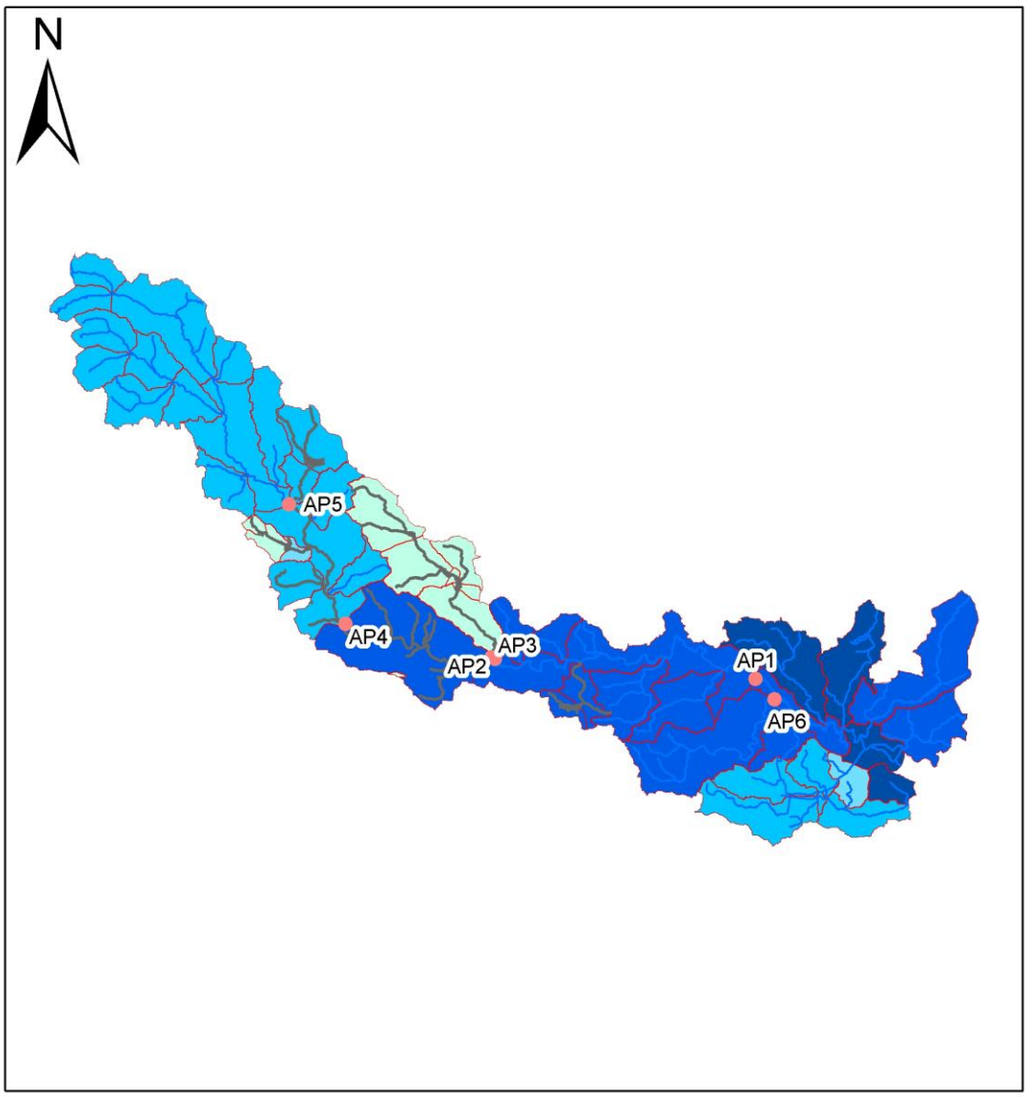
The availability of water for abstraction within a river varies greatly from high to low flows. By assessing the quantity of water available at different flows it is possible to see when there is a surplus or deficit of water and the associated reliability of an abstraction. This is an indication only;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

Table 3 shows the resource availability colour associated with the percentage reliability of consumptive abstraction. Map 3 gives an indication of the resource reliability in the Wharfe and Lower Ouse CAMS area, expressed as percentage of time.

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 3 Percentage reliability of consumptive abstraction

Map 3 Wharfe and Lower Ouse CAMS
Resource Reliability (% of the time)



Legend

- Wharfe & Lower Ouse CAMS APs
- Wharfe & Lower Ouse Rivers
- Heavily Modified and Artificial Rivers
- Heavily Modified and Artificial Lakes
- Wharfe & Lower Ouse CAMS Water Bodies
- Water Resources available less than 30%
- Water Resources available at least 30%
- Water Resources available at least 50%
- Water Resources available at least 70%
- Water Resources available at least 95%

Kilometres
0 3 6 12 18 24 30

Creation date February 2013

Map 3 Water resource reliability expressed as percentage of time available

4. How we manage abstractions in the Wharfe and Lower Ouse 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 Wharfe and Lower Ouse 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'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.

Impoundments
Applications for impoundments will be dealt with on a case by case basis. 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 Flow conditions 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.

29% of the licences in the Wharfe and Lower Ouse CAMS area are time-limited. CEDs occur every twelve years. The next CED for the Wharfe and Lower Ouse CAMS area is 31 March 2018 and the subsequent one is 31 March 2030.

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

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.

Table 4 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 4 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.

The Public Water Supply abstraction at Addingham and associated release from Grimwith Reservoir to support this abstraction was not accurately represented in the previous CAMS licensing strategy. This impacted on water resource availability at AP4 and AP5 and some of the upstream water bodies. We have remodelled the resource assessment for AP4 and AP5 in this update and the results are displayed in Table 4.

Reading from top to bottom in Table 4 are the APs in the Wharfe and Lower Ouse 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 megalitres per day (Ml/d) that may be available. In cases where there is water available at all flows we will apply a Minimum Residual Flow (MRF) to protect very low flows.

AP	Name	Water Resource Availability Colour at Q95	HOF Restriction (Ml/d)	Number of days per annum abstraction may be available	Approximate volume available at restriction (Ml/d)	Is there a gauging station at this AP?	Additional restrictions AP name and restriction
1	Tadcaster	Restricted water available for licensing	581.6 HOF3	237	31.1	Tadcaster	Critical AP
2	River Wharfe	Water available for licensing	489.5	237	50.5	Addingham	This HOF is set to protect flows at critical AP1 downstream
3	River Washburn	**Water not available for licensing**	212.8	51.1	15.7	No	Critical AP
4	Addingham	Water available for licensing	395.8	237	27.1	Addingham	This HOF is set to protect flows at critical AP1 downstream Updated Resource Assessment
5	River Dibb	Water available for licensing (above Grimwith reservoir only)	42.4	237	8.1	No	This HOF is set to protect flows at critical AP1 downstream Updated Resource Assessment
6	Cock Beck	Water available for licensing	9.8 HOF1	329	1.3	No	Critical AP

Table 4 HOFs for the assessment points of the Wharfe and Lower Ouse CAMS

Assessment Point descriptions

The information below for each AP gives an indication of whether licences will be renewed or granted.

Water available for licensing

The following APs have water available for licensing:

- **AP2 River Wharfe**
- **AP4 Addingham**
- **AP5 River Dibb**
- **AP6 Cock Beck**

Using Table 4 and AP2 as an example, the following will apply where water is available for licensing:

For AP2, River Wharfe, there is 50.5 Ml/d water available for licensing with the HOF condition of 489.5 Ml/d. Following this, further licences will be granted with progressively more stringent HOF conditions to protect flows.

This means that for **new** licences:

• There is water available for abstraction;

• We will continue licensing the available resource in APs and implement HOF conditions to protect flows at AP1 or AP6 as appropriate;

• In AP5 water is only available for licensing above Grimwith reservoir on a case by case basis. In AP5 flows are higher than normal due to the reservoir releases made from Grimwith. This additional water is supporting a specific downstream abstraction in AP4 and is therefore not available for new licences below the reservoir. See Heavily Modified Water Bodies for further information;

• There is a time limit of 31 March 2030.

For **existing** licences:

• There is a presumption of renewal, subject to the other renewal criteria and local considerations;

• Renewals may be subject to minor changes including the addition of water efficiency conditions.

Restricted water available for licensing

The following assessment points have restricted water available for licensing:

- **AP1 Tadcaster**

This means that for **new** licences:

• Water is only available during periods of medium to high flows with HOF conditions;

• There is a time limit of 31 March 2030.

For **existing** licences:

• There is a presumption of renewal, subject to the other renewal criteria and local considerations;

• Renewals may be subject to minor changes including the addition of water efficiency conditions.

Water not available for licensing

The following assessment point has no water available for licensing:

- **AP3 River Washburn**

This means that for **new** licences:

• Water may only be available during periods of high flows with HOF conditions;

• There is low reliability of abstraction;

• There is a time limit of 31 March 2030.

For **existing** licences:

• Options may be developed with licence holders on how to improve sustainability where abstraction is causing environmental damage (see section 4.5 Restoring Sustainable Abstraction for more information).

Heavily Modified Water Bodies

Several surface water bodies are designated as Heavily Modified for water resource purposes in the Wharfe and Lower Ouse catchment, as they contain a public water supply reservoir or the flow regime is substantially modified due to reservoir compensation releases. Table 5 contains information on reservoirs within the Wharfe and Lower Ouse CAMS.

The reservoirs listed in Table 5 and their associated releases significantly impact AP3, AP4 and AP5. In AP3 the flows are highly modified by the reservoirs and we will issue licences on a precautionary basis according to information provided in Table 4. We will allow some additional licensing in AP4 based on the updated figures in Table 4 but this will be on a case by case basis.

In AP5 flows are higher than normal due to the reservoir releases made from Grimwith reservoir. This additional water is supporting a specific downstream abstraction in AP4 and is therefore not available for new licences. Therefore, within AP5 licences will only be considered in the area above Grimwith reservoir and will be issued locally on a case by case basis.

Reservoir Name	Compensates / Storage	Augmentation for licence downstream	AP impacted
Grimwith	Compensates	Yes – releases made to support public water supply abstraction downstream	AP4, Addingham AP5, River Dibb
Lindley Wood	Compensates	No	AP3, River Washburn
Fewston	Storage	No	AP3, River Washburn
Swinsty	Storage	No	AP3, River Washburn
Thruscross	Storage	No	AP3, River Washburn
Upper Barden	Storage	No	AP4, Addingham
Lower Barden	Storage	No	AP4, Addingham
March Ghyll	Compensates	No	AP2, River Wharfe
Chelker	Storage	No	AP4, Addingham
Eccup	Storage	No	AP1, Tadcaster
Panorama	Storage	No	AP2, River Wharfe
Carr Bottom	Compensates	No	AP2, River Wharfe

Table 5 Reservoirs within the Wharfe and Lower Ouse CAMS

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. Table 6 lists the water related designated sites in the Wharfe and Lower Ouse CAMS.

Designation	Designated site name
Water related Sites of Special Scientific Interest (SSSIs)	Bastow Woods Boreham Cave Cockerham Meadow Conistone Old Pasture Deepdale Meadows Dow Cave System East Keswick Fitts Eccup Reservoir Far Mains & Far Limekiln Close Meadows Grass Woods Hambleton Quarry Hawkswick Wood Hetchell Wood Kettlewell Meadows Kilnsey Flush Linton Common Malham-Arncliffe Malham Arncliffe (Cool Pasture) Meadow Croft, Skythorns Norwood Bottoms Oughtershaw Beckermonds River Wharfe Riverine Scoska Wood Strid Wood Upper Wharfedale West Nidderdale, Barden & Blubberhouses Moors Yockenthwaite Meadows
Water related Special Areas of Conservation (SACs)	Craven Limestone Complex Malham Tarn
Water related Special Protection Areas (SPA)	North Pennine Moors South Pennine Moors

Table 6 Important features that may affect water availability

4.2.2 Groundwater

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

On principle aquifers we have divided the area into Groundwater Management Units (GWMU). 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. There are currently no Hands-Off Level conditions on licences within the Wharfe and Lower Ouse CAMS area. Map 4 and Table 7 summarise groundwater resource availability in this area.

Groundwater management unit	Licence restriction
Magnesian Limestone (Non-tidal)	**Restricted groundwater availability** Surface water and groundwater resource availability may override one another
Magnesian Limestone (Tidal)	**Not assessed** Licences considered on a case by case basis
Sherwood Sandstone	**Restricted groundwater availability** except around Selby where **Groundwater is not available**. See **Sherwood Sandstone** for further details

Table 7 Licence restrictions on groundwater abstractions in the Wharfe and Lower Ouse CAMS area

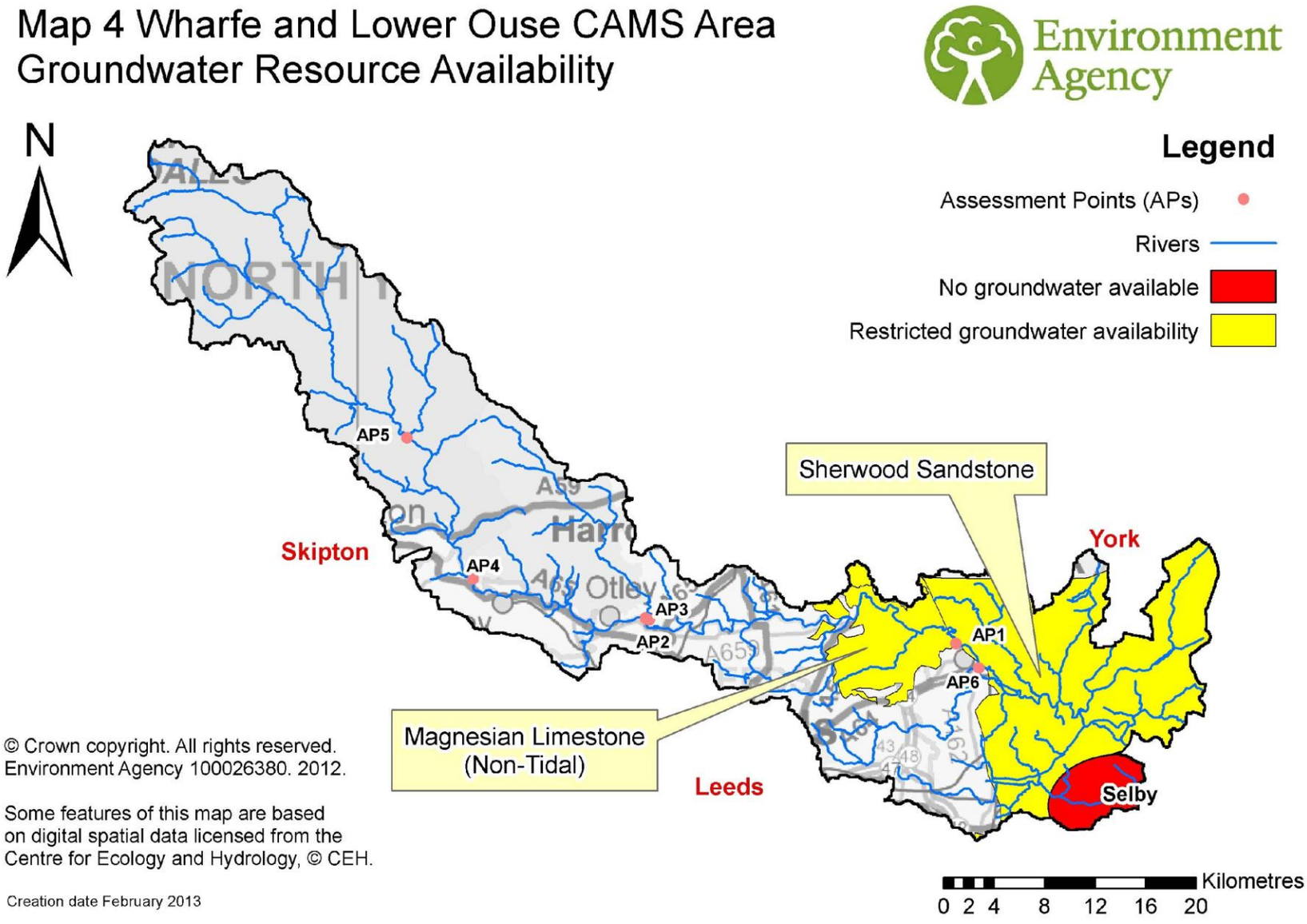
Magnesian Limestone (Non-tidal)
Groundwater and surface water are very well connected in this GWMU. The aquifer may either contribute to baseflow in the River Wharfe or receive water from it, depending on groundwater levels. Because of this connectivity, the resource availability of surface water may override the resource availability of groundwater, and vice versa. Any licences for abstraction in this area will take this link into account.

Magnesian Limestone (Tidal)
This area lies to the south of the non-tidal Magnesian Limestone GWMU and to the west of the Sherwood Sandstone. Because of the tidal influences on both the River Wharfe and the aquifer this unit has not been assessed and abstraction licences will be considered on a case by case basis.

Sherwood Sandstone
Part of the Sherwood Sandstone aquifer is located within the Wharfe and Lower Ouse CAMS area. There is no water available for abstraction within the Selby area which includes the Wharfe and Lower Ouse units of the Sherwood Sandstone aquifer (see Map 4). Groundwater levels in this area will be drawn down if new licences are granted – this places a risk on the availability of water to existing licence holders and may lead to the introduction of saline water. We do not consider this to be acceptable because it means the water becomes unfit for most uses and we have a legal duty to protect the rights of existing abstractors. We will consider licence trading in the Selby area if there is a benefit to the underlying Sherwood Sandstone aquifer.

The area north of Selby does not have the same abstraction pressures. We are therefore treating this differently to the area south of Selby and may allow some additional abstraction to take place. The boundary of where we will adopt different approaches to licensing was mapped using a groundwater model. The line we have used is where the groundwater table is at sea level. This can be seen in Map 5. In the vicinity of Selby the groundwater contours have dropped below sea level. This is an unnatural situation which we want to prevent occurring further north. Where the groundwater level is modelled as being at sea level or higher, we may allow abstraction, but where the groundwater level is less than sea level there is no water available for further abstractions. This will be subject to assessment of local conditions and dependent on the outcome of groundwater pump tests. Any new licence applications will be assessed on a case by case basis and determined using the Sherwood Sandstone numerical model and not the prescribed CAMS framework.

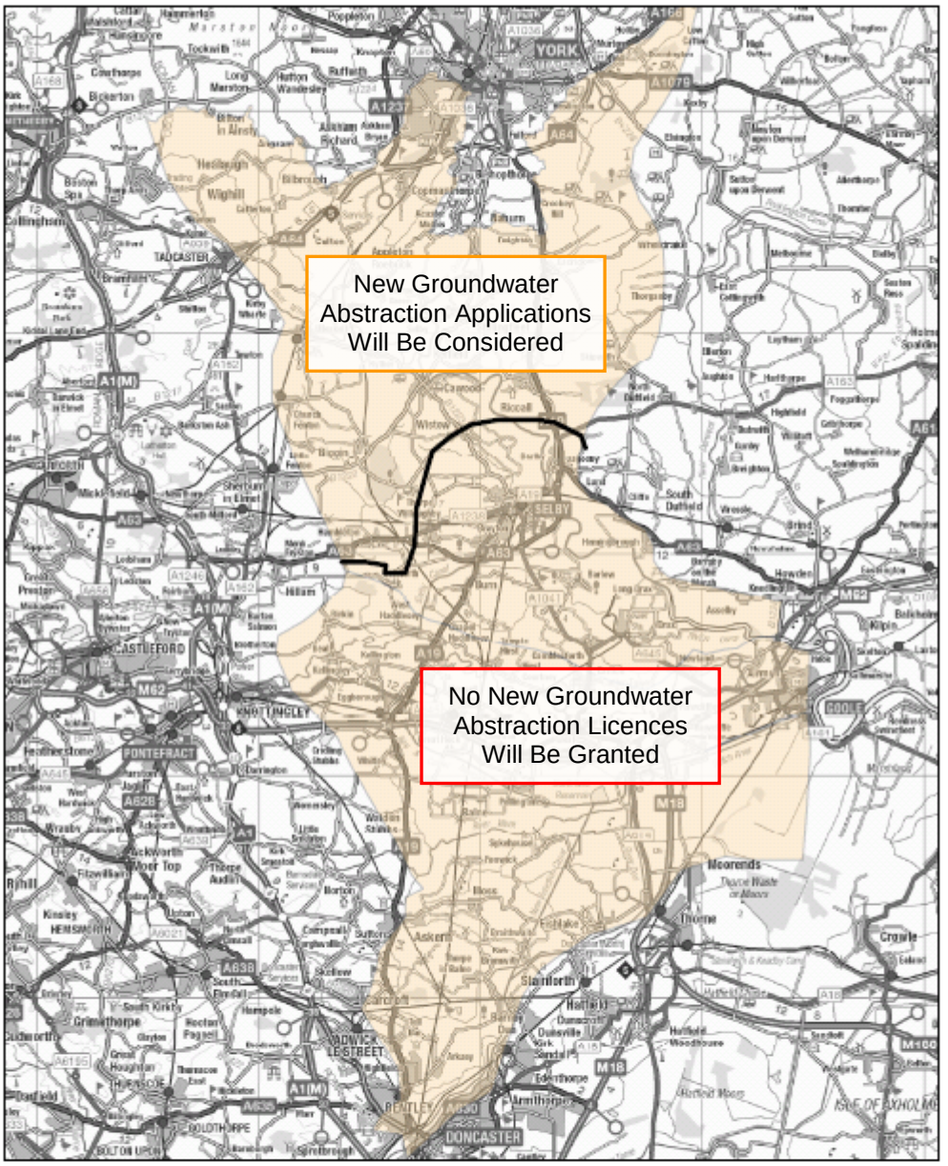
Map 4 Wharfe and Lower Ouse CAMS Area Groundwater Resource Availability



Creation date February 2013

Map 4 Groundwater resource availability in the Wharfe and Lower Ouse CAMS area

Map 5 Sherwood Sandstone aquifer



Map 5 Position of sea level within the Sherwood Sandstone aquifer in the Wharfe and Lower Ouse CAMS Area

4.2.3 Estuaries and coastal

The OS map defines the National Tidal Limit on the River Wharfe as being at Ulleskelf (SE 52322 40126). However, there is no physical barrier to the tide at this location so the tidal limit moves depending on tidal and fluvial conditions. During periods of high tides and low flows a significant tidal signal can still be seen at Tadcaster Road Bridge with influences continuing as far as Tadcaster Weir (SE 48519 43727) in certain conditions.

The tidal River Wharfe then joins the River Ouse one kilometre upstream of Cawood. The tidal River Ouse continues past Selby and is then joined by the River Derwent and River Aire before entering the Humber estuary. Abstractions for either surface water or groundwater in the tidal-influenced areas will be assessed on a case by case basis.

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 2.

CAMS water resource availability colour	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.

Table 8 Resource availability colours and our approach to licence trading

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 three 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.

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 Wharfe and Lower Ouse CAMS there are six 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 under the Water Framework Directive (WFD) and may then go forward to become part of the Restoring Sustainable Abstraction (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 of Water Framework Directive water bodies

In addition to the RSA programme, we are investigating whether reduced water flow may be causing problems under the 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 (SACs) and Special Protection Areas (SPAs). 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

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 $20m^3/d$.
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	Environmental Flow Indicator
FL	Full Licensed (scenario)
GEP	Good Ecological Potential
GES	Good Ecological Status
GW	Groundwater
GWMU	Groundwater Management Unit
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
MRF	Minimum Residual Flow
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

Would you like to find out more about us, or about your environment?

Call us on
03708 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)
floodline 0845 988 1188

*** Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls. These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Please note charges will vary across telephone providers.**

Environment first: This publication is printed on paper made from 100 per cent previously used waste. By-products from making the pulp and paper are used for composting and fertiliser, for making cement and for generating energy.