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# Steeping, Great Eau and Long Eau Catchment Abstraction Management Strategy

(February, 2013)

A licensing strategy to manage water resources sustainably

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# Foreword

Water is the most essential of our natural resources. It is our job to ensure that water is managed and used sustainably. Population growth and climate change predictions show that pressure on water resources is likely to increase in the future. So we have to ensure that we continue to maintain and improve sustainable abstraction whilst balancing the needs of society, the local economy and the environment.

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

A handwritten signature in black ink that reads "S. Longstone". The signature is written in a cursive, slightly slanted style.

**Sue Longstone**

**Area Manager**

## Contents

<b>1. About CAMS</b> .....	<b>4</b>
1.1 When is an abstraction licence required?.....	4
1.2 How CAMS contributes to achieving environmental objectives under the Water Framework Directive (WFD).....	4
<b>2. Steeping, Great Eau and Long Eau CAMS area</b> .....	<b>6</b>
<b>3. Water resource availability of the Steeping, Great Eau and Long Eau CAMS area</b> .....	<b>8</b>
3.1 Resource assessment.....	8
3.2 Resource availability.....	8
3.3 Abstraction licensing strategy.....	13
3.4 Resource reliability.....	20
<b>4. How we manage abstractions in the Steeping, Great Eau and Long Eau CAMS area</b> .....	<b>21</b>
4.1 National licensing principles.....	21
4.2 Abstraction restrictions.....	23
4.3 Local features that may affect resource availability in the Steeping, Great Eau and Long Eau CAMS.....	24
4.4 Opportunities for licence trading.....	29
4.5 New authorisations.....	30
4.6 Restoring Sustainable Abstraction (RSA).....	30
<b>References</b> .....	<b>32</b>
<b>Glossary of terms</b> .....	<b>33</b>
<b>List of abbreviations</b> .....	<b>35</b>

# 1. About CAMS

This Catchment Abstraction Management Strategy (CAMS) sets out how we will manage water abstraction in the Steeping, Great Eau and Long Eau CAMS area. It supersedes the strategy issued in 2005. This CAMS document describes where water is available for abstraction and the implications water resource availability has for new and existing water abstraction licences. If water is available we will give you an indication of the reliability of a potential abstraction licence.

Once you have read this strategy, if you want to abstract water, you should contact us to find out if you need an abstraction licence. If you do require a licence we will advise on the likely reliability of a proposed abstraction and any issues that could affect the likelihood of a licence being issued.

## 1.1 When is an abstraction licence required?

You need a licence from us if you want to abstract more than 20m<sup>3</sup>/day (4 400 gallons) of water from a:

- river or stream
- reservoir, lake or pond
- 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](mailto:enquiries@environment-agency.gov.uk)
- or visit our website at [www.environment-agency.gov.uk](http://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 us to manage future abstraction in a sustainable manner.

We 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 Steeping, Great Eau and Long Eau 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. Where there is a need to redress the balance between water for people and the environment we will work to make changes through the Restoring Sustainable Abstraction programme (see Section 4.6).

The background, aims and principles of CAMS, the overarching 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.

## 1.2 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;
- identifying water bodies that fail the 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](#)).

## 2. Steeping, Great Eau and Long Eau CAMS area

Map 2.1 shows the Steeping, Great Eau and Long Eau CAMS area. The Steeping, Great Eau and Long Eau CAMS area covers an area of approximately 670 km<sup>2</sup>, and is bounded by the Grimsby, Ancholme and Louth CAMS area to the north, the Witham CAMS area to the west, and the North Sea to the east.

### Hydrology

The CAMS area consists of a series of rivers and drains. The rivers flow in a generally eastward direction. From the north to south the main rivers are; the Great Eau/long Eau, Woldgrift Drain, Willoughby High Drain and Lymm/Steeping. The River Lymm/Steeping receives water in its upper reaches from the Chalk and Spilsby Sandstone aquifers and flows south-east to discharge into The Wash near Skegness. The Great Eau and Long Eau discharge directly into the North Sea.

The lower reaches of most of the rivers become embanked highland carriers where they cross the low-lying coastal plain. Between these highland carriers there is an extensive network of artificial dykes and drains which are operated by the Lindsey Marsh Internal Drainage Board (IDB). Parts of the IDB area are drained to the highland carriers by land drainage pumps. The remaining areas drain direct to the North Sea by land drainage pump or gravity (see Section 4.3.6).

### Main water resource pressures

Water is abstracted from groundwater and surface water sources mainly for agriculture and public water supply. During periods of dry weather water is transferred from the Great Eau at Cloves Bridge to support abstraction from the Louth Canal to the public water supply reservoir at Covenham. The remainder of abstraction are predominantly for private and industry use.

### Topography

The western boundary of the catchment is marked by a chalk escarpment which gives rise to the rivers in the CAMS area. From the escarpment the land surface falls east to the North Sea coast. Adjacent to the coast is an extensive low-lying plain that is protected by flood defences.

### Geology

The solid geology of the Steeping, Great Eau and Long Eau CAMS is dominated by the chalk escarpment on the western boundary of the catchment. The Lincolnshire Chalk and the Spilsby Sandstone are major aquifers, helping meet demands for public water supply and, to a lesser extent, agriculture. In addition there are several minor aquifers and areas of sands and gravels which help meet local demands for water.

### Land use

The Steeping, Great Eau and Long Eau CAMS area is largely rural in nature with agriculture accounting for approximately 95% of the land use. Urban development accounts for less than 2% of the catchment area with the main towns being Skegness, Sutton on Sea, Wainfleet All Saints and parts of Spilsby and Louth.





### Biodiversity

The CAMS area includes sites of both national and international ecological and conservation importance. There are 23 Sites of Special Scientific Interest (SSSI) within the catchment, several of which are water-dependent such as Calceby Marsh SSSI, Swaby Valley SSSI and New England Valley SSSI.

At the northern-eastern boundary of the CAMS area are the Saltfleetby-Theddlethorpe Dunes Special Area of Conservation (SAC), SSSI and National Nature Reserve (NNR) and the Humber Estuary Special Protection Area (SPA), SAC, and Ramsar wetland of international importance. At the south-eastern boundary of the CAMS area are the Wash SPA, SAC and Ramsar site and the Gibraltar Point SPA, SSSI and NNR.



**Legend**

-  Steeping, Great Eau and Long Eau CAMS water bodies
-  Steeping, Great Eau and Long Eau CAMS rivers
-  Steeping, Great Eau and Long Eau CAMS assessment points
-  Areas covered by more detailed maps

**Detailed map areas**

- A - Great Eau and Long Eau
- B - River Lymm/Steeping

Kilometres  
0 1.5 3 6 9 12

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Creation date 22 January 2013

**Map 2.1 The Steeping, Great Eau and Long Eau CAMS (Catchment Abstraction Management Strategy) area.**



# 3. Water resource availability of the Steeping, Great Eau and Long Eau CAMS 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 river flow if all abstraction licences were being used to full capacity;
- the Recent Actual (RA) scenario – the river flow left after abstractions and discharges operating at their recent actual rate have been taken into account. Recent actual rates are calculated as an average over a recent 6 year period (2002 – 2008).

### 3.1.1 Surface water assessment points

We assess surface water flows at assessment points (APs). Assessment points can be found at strategic locations within the river network, often where two major rivers join or at a gauging station (see Map 2.1). These assessment points are the focus of resource assessment and abstraction licensing.

All abstraction licences are subject to an assessment of resource availability to take account of any local and downstream issues. Most new or varied licences contain hands-off flow (HOF) conditions to protect other water users and to try to prevent river flows falling below the environmental flow indicators. HOF conditions allow us to reduce or stop abstraction when flows fall below a specified threshold (see Section 4.2.2 for more information).

### 3.1.2 Surface water flow statistics

River flows change naturally throughout the year, with the highest flows usually occurring in winter months and the lowest flows usually occurring in the summer. We want to protect flow variability in our rivers so that the flow regime remains as natural as possible throughout the year. To do this we have analysed flow data for rivers within the Steeping, Great Eau and Long Eau CAMS area.

Using this data we know how frequently a particular flow occurs at different locations within each river within an average year. We present this information as 'flow statistics'. These indicate how frequently a certain flow is exceeded at a particular point within a river. For example, natural flow in the Great Eau at Cloves Bridge (assessment point 3) exceeds 72.0 Ml/d for 50% of the year (i.e., Q50 = 72.0 Ml/d). We assess water resource availability at four different flow quantities to ensure that the natural flow variability of rivers is protected: Q95 (low flow, i.e., river flow exceeds this value 95% of the time), Q70 (medium/low flow), Q50 (medium flow), Q30 (high flow).

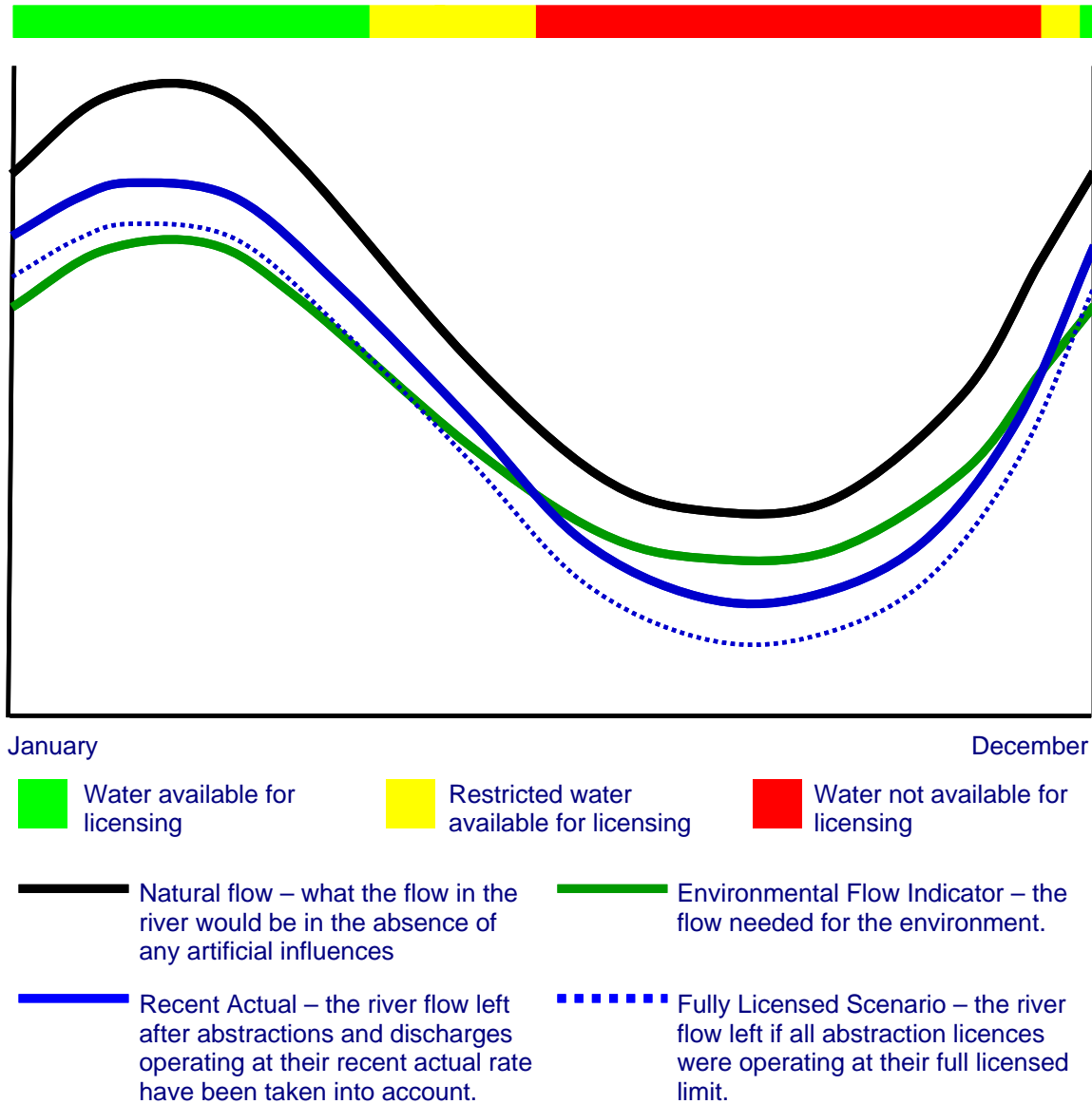
## 3.2 Resource availability

### 3.2.1 Surface water

If you want to abstract water, you need to know the water resource availability within a catchment is 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 flows, the recent actual flows and the EFI (see Figure 3.1).



**Figure 3.1 An example river hydrograph during a typical year. The bar at the top shows how the flow scenarios are used to inform us of water resource availability. Please refer to the text and Table 3.1 for further information.**

Water resource availability is calculated at the scale of individual water bodies. Water resource availability colours are used to show the availability of water resources for further abstraction. We'll add any conditions necessary to protect flows to a new or varied licence during the licence determination procedure. We will base licence conditions on the water resource availability at different flows (high to low). Table 3.1 lists the implications of each water resource availability colour for licensing.

Water resource availability colour	Implications for licensing
High hydrological status	<ul style="list-style-type: none"> <li>• There is more water than required to meet the needs of the environment.</li> <li>• Very little actual abstraction occurs and the river shows virtually undisturbed, or close to natural, flow conditions.</li> <li>• Due to the need to maintain the near pristine nature of the water body, further abstraction is severely restricted.</li> </ul>
Water available for licensing	<ul style="list-style-type: none"> <li>• There is more water than required to meet the needs of the environment.</li> <li>• New licences will be considered depending on local and downstream impacts.</li> </ul>
Restricted water available for licensing	<ul style="list-style-type: none"> <li>• Fully licensed (FL) flows fall below the EFI.</li> <li>• If all licensed water is abstracted there will not be enough water left for the needs of the environment. No new unconstrained consumptive licences will be granted. It may also be appropriate to investigate the possibilities for reducing fully licensed risks.</li> <li>• Water may be available if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder.</li> </ul>
Water not available for licensing	<ul style="list-style-type: none"> <li>• Recent actual flows are below the EFI.</li> <li>• This scenario highlights water bodies where flows are below the indicative flow requirement to help support Good Ecological Status (GES) (as required by the Water Framework Directive). Note: we are currently investigating water bodies that are not supporting GES / GEP (Good Ecological Potential).</li> <li>• No further consumptive licences will be granted. Water may be available if you can buy (known as licence trading) the amount equivalent to that recently abstracted from an existing licence holder.</li> </ul>

**Table 3.1 Implications of water resource availability colours.**

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 HOF conditions which protect the low flows. A river may also be heavily supported by compensations releases from a reservoir and may have unnaturally high 'low' flows which means that the river environment is most vulnerable at medium flows.

When assessing water availability we also have to consider downstream requirements i.e. existing licences and environmental needs. To help us protect these downstream requirements we colour water bodies with the worst downstream resource availability colour. The downstream water resource availability in the Steeping, Great Eau and Long Eau CAMS is described in Section 3.3.

In addition to water resource availability colours described above we have classified some surface water bodies as being Heavily Modified or Artificial Water Bodies (HMWB or AWB). 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 (see Section 4.3.1 for more information). The licensing implications of water bodies classified as HMWB are described in Table 3.2.

Water resource availability colour	Implication for licensing
HMWBs (and /or discharge rich water bodies)	<ul style="list-style-type: none"> <li>• 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 can be found in Section 4.3.1.</li> <li>• There may be water available for abstraction in discharge rich catchments. Please contact us to find out more.</li> </ul>

**Table 3.2 Licensing implications of water bodies classified as being HMWB.**

### **3.2.2 Groundwater**

Map 3.1 shows the location of the groundwater resources in the Steeping, Great Eau and Long Eau CAMS area. We are currently developing a groundwater model which will further enable us to assess groundwater resources in the future.

#### **Lincolnshire Chalk**

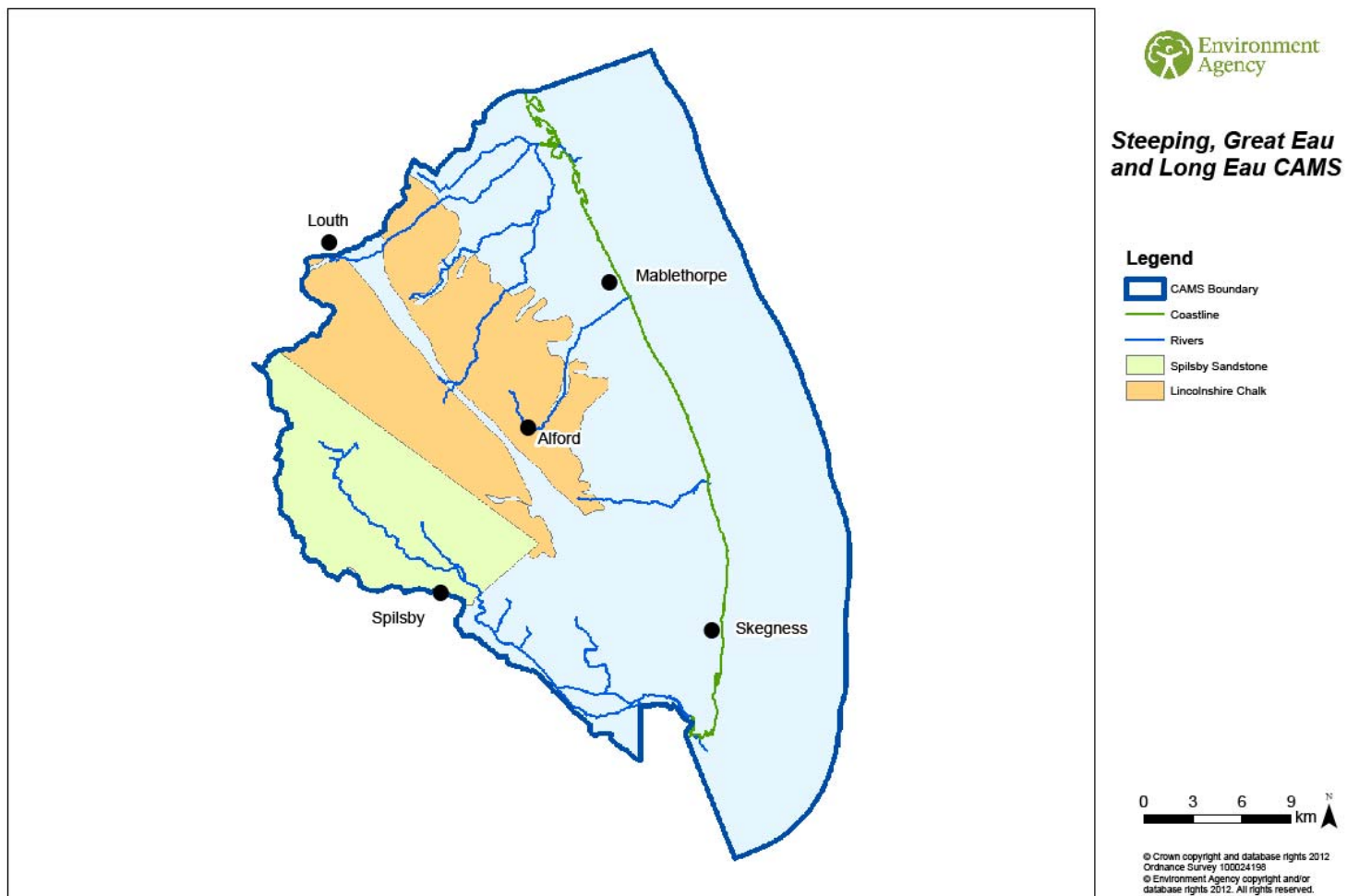
The Lincolnshire Chalk is the dominant groundwater resource in this CAMS area. It extends beyond the outline of Map 3.1 but becomes deeply confined. Chalk is a form of white limestone. Within the aquifer, groundwater generally flows west to east following the shallow dip of the aquifer. Glacial boulder clays overlie the Chalk and associated permeable material over much of the area to the east of the Wolds. Abstraction takes place mainly from this confined region, although only the upper portion of the confined Chalk contributes to groundwater flow – the deeper fraction is less fractured and so groundwater cannot flow through. Within this CAMS area the chalk is effectively separated by an underground 'cliff', creating two discrete units.

The resources in the Lincolnshire Chalk are fully committed to existing users and the environment. Consequently, no new consumptive licences will be considered. New non-consumptive licenses will be considered on a case-by-case basis, and will be time-limited.

#### **Spilsby Sandstone**

The Spilsby Sandstone outcrops along the foot of the Wolds before dipping gently to the east under the Chalk and other formations. The outcrop is widest at the southern end of the Wolds near Spilsby and narrows northwards before disappearing around Grasby. The sandstone reaches around 25 m in thickness in the centre, thinning to the north and south. Recharge can take place from rainfall at the outcrop or leakage inputs from overlying drift cover or confining beds. Most of the recharge is lost through the many springs associated with the Spilsby Sandstone, which have contributed to mudflows and landslips along the Wolds scarp.

The resources in the Spilsby Sandstone are fully committed to existing users and the environment. Consequently, no new consumptive licences will be considered. New non-consumptive licenses will be considered on a case-by-case basis, and will be time-limited.



**Map 3.1 Groundwater resources in the Steeping, Great Eau and Long Eau CAMS area.**

### 3.3 Abstraction licensing strategy

This section describes the licensing strategy and available surface water resource in the Steeping, Great Eau and Long Eau CAMS area. At present we are only able to provide information on water availability and licensing implications at key locations (assessment points – see Section 3.1.1) within the CAMS area. The water resource availability at an AP gives an indication of the water resource availability in the water bodies upstream of the AP. However, they can give an indication only and it should be noted that local factors may affect the water resource availability at the water body scale. Water body scale information on water resource availability in the Steeping, Great Eau and Long Eau CAMS will be published in summer 2013. To discuss water resource availability and/or the possibility of new abstraction licences in this area please contact your local Integrated Environment Planning team at:

Integrated Environment Planning  
Environment Agency  
Waterside House  
Waterside North  
Lincoln  
LN2 5HA

Tel: 01522 785024  
Fax: 01522 785035

Or by email to: [AEPANGN@environment-agency.gov.uk](mailto:AEPANGN@environment-agency.gov.uk)

To make it easier to assess local water resource availability, we have divided the Steeping, Great Eau and Long Eau CAMS area into two sub-units based upon their hydrological characteristics and geographical locality (see Map 2.1). Throughout this section the text describes the water resource availability and licensing implications at the assessment points and the associated tables provide information about the hands-off flow conditions that any new licences are likely to be subject to.

It is important to note that this strategy may not apply to licences that return abstracted water back close to the point of abstraction or that result in a net benefit to the water environment.

#### 3.3.1 Area A – Great Eau and Long Eau

Area A contains four assessment points (see Map 3.2). The water resource availability and resultant licensing implications at the assessment points are discussed below and in Table 3.3.

##### **AP1 – AP3: Great Eau and Long Eau**

Water availability in the upstream reaches of the Great Eau and Long Eau is overridden by the more critical water resource availability at Cloves Bridge (AP3). Resources in the upstream reaches of the Great Eau and Long Eau are needed to provide additional flow support to Cloves Bridge and therefore only restricted water is available for abstraction.

There is restricted water available at high, medium and medium/low flows in the Great Eau and Long Eau, but no water available for licensing at low flows.

This means that for **new** licences:

- No new unconstrained licences will be granted at any flows;
- New licences for consumptive water abstraction will be considered at very high flows (occurring less than 30% of the time), subject to HOF conditions (see Table 3.3);
- Water may be available at high to medium/low flows, subject to HOF conditions, if you can ‘buy’ (known as licence trading) the entitlement to abstract water from an existing licence holder;
- Water may be available at low flows, subject to HOF conditions, if you can ‘buy’ (known as licence trading) the amount equivalent to that recently abstracted from an existing licence holder.
- Any new abstraction licences with the potential to affect the downstream Humber Estuary SPA and SAC, and/or the Saltfleetby-Theddlethorpe Dunes SAC sites will be assessed under the Habitats Regulations (see Section 4.3.3 and 4.6);
- Applications for non-consumptive purposes will be considered on a case-by-case basis.

For **existing** licences:

- There is the presumption of renewal for time limited licences, subject to the three renewal criteria (environmental sustainability, continued justification of need, and efficient use of water) and local considerations (see Section 4.2.1);
- In areas where recent actual flows have fallen below EFI, we may seek to reduce licensed quantities as part of the renewal process (further information regarding these areas will be published in summer 2013);
- As part of the renewal process licences may be subject to change.

#### **AP4: Woldgrift Drain**

There is water available for abstraction from the Woldgrift drain at all flows.

This means that for **new** licences:

- No new unconstrained licences will be granted at any flows;
- New licences for consumptive water abstraction will be considered at all flows, subject to HOF conditions (see Table 3.3);
- Any new abstraction licences with the potential to affect the downstream Humber Estuary SPA and SAC, and/or the Saltfleetby-Theddlethorpe Dunes SAC sites will be assessed under the Habitats Regulations (see Section 4.3.3 and 4.6);
- Applications for non-consumptive purposes will be considered on a case-by-case basis.

For **existing** licences:

- There is the presumption of renewal for time limited licences, subject to the three renewal criteria (environmental sustainability, continued justification of need, and efficient use of water) and local considerations (see Section 4.2.1);
- As part of the renewal process licences may be subject to change.



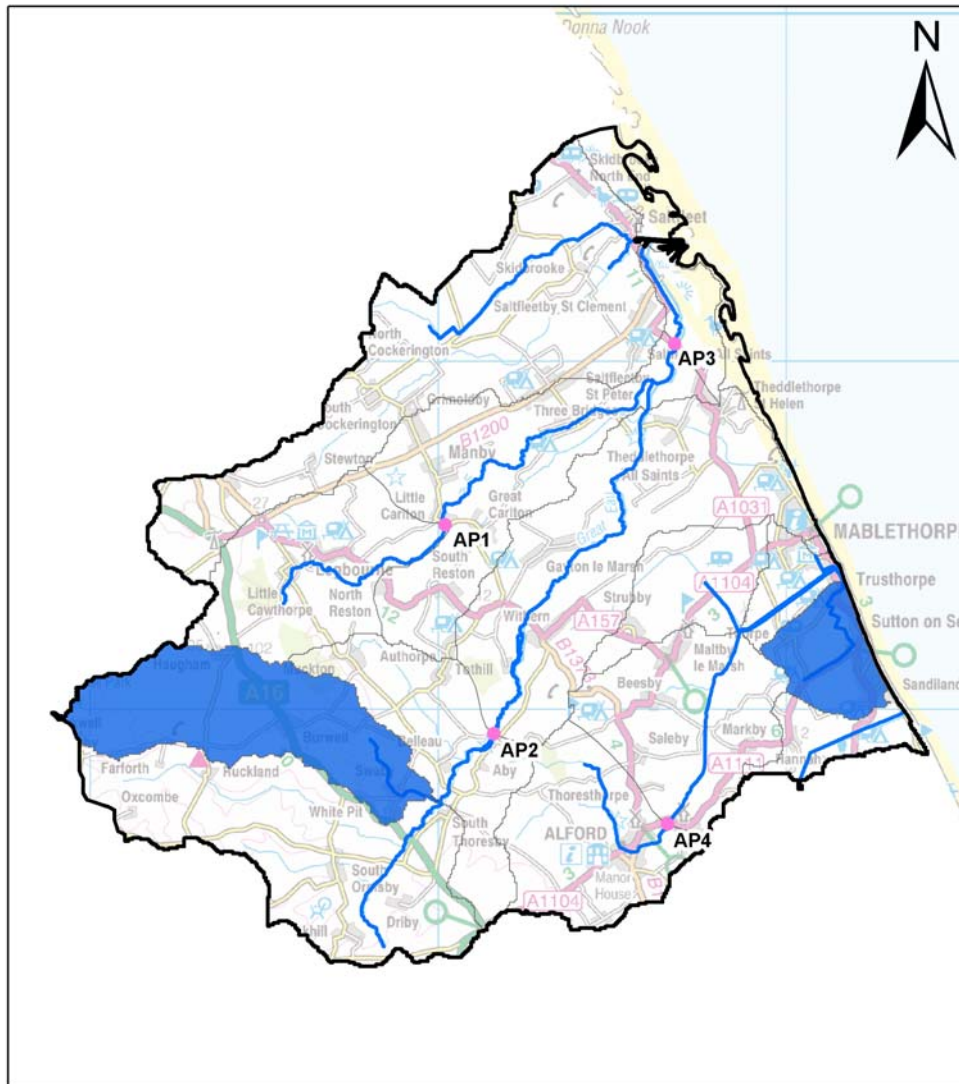
AP	AP Name	HOF restriction (Ml/d)	Days per year when abstraction may be available	Approximate volume available at restriction (Ml/d)	Is there a gauging station at this AP?	Additional restrictions
1	Little Carlton (Long Eau)	14.1 (Q30)	109	9.7	Yes	n/a
2	Claythorpe (Great Eau)	59.1 (Q30)	109	27.6	Yes	n/a
3	Cloves Bridge (Great Eau)	72.0 (Q30)	109	9.6	No	Additional LDE restrictions – see Section 4.3.6
4	Bilsby (Woldgrift Drain)	2.0 (Q100)	365	0.4	Yes	n/a

**Table 3.3 Hands-off flow conditions for the assessment points in Area A (Long Eau and Great Eau) of the Steeping, Great Eau and Long Eau CAMS area.**

Table 3.3 gives an indication of how much water is available for further abstraction and the associated restrictions that we may apply to new and varied abstraction licences from the main river in Area A. Tributaries to the main river may be subject to different restrictions and quantities. Hands-off flow conditions protect river flows (see Section 4.2.2). For example, at assessment point 1 (Little Carlton) any new abstraction licence will not be able to abstract water if the river flow falls below 14.1 Ml per day. This flow is exceeded 30% of the time (Q30). Therefore, abstractions are likely to only be possible for 30% of the year (i.e., approximately 109 days). Given the amount of time river flows exceed 14.1 Ml/day and the size of the catchment providing water to assessment point 1 we believe that, on those days when abstraction is possible, there is approximately 9.7 Ml of water available for abstraction per day at Little Carlton.

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 the table if applicable. In cases where there is water available at all flows we may apply a Minimum Residual Flow (MRF) to protect very low flows. We'll decide this on a case-by-case basis.





**Legend**

-  Steeping, Great Eau and Long Eau CAMS water bodies
-  Steeping, Great Eau and Long Eau CAMS assessment points
-  Heavily modified and artificial lakes
-  Heavily modified and artificial rivers
-  Steeping, Great Eau and Long Eau CAMS rivers
-  High hydrological status water body

0 1 2 4 6 8 Kilometres

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**Map 3.2 Location of assessment points in Area A (Great Eau and Long Eau) of the Steeping, Great Eau and Long Eau CAMS area.**

### 3.3.2 Area B - River Lymm/Steeping

Area B contains three assessment points (see Map 3.3). The water resource availability and resultant licensing implications at the assessment points are discussed below and in Table 3.4.

#### AP5: Willoughby High Drain

There is water available for abstraction at high and medium flows, but no water available for abstraction at medium/low and low flows.

This means that for **new** licences:

- No new unconstrained licences will be granted at any flows;
- New licences for consumptive water abstraction will be considered at high and medium flows, subject to HOF conditions (see Table 3.4);
- Water may be available at lower flows, subject to HOF conditions, if you can buy (known as licence trading) the amount equivalent to that recently abstracted from an existing licence holder;
- Any new abstraction licences with the potential to affect the downstream Humber Estuary SPA and SAC, and/or the Saltfleetby-Theddlethorpe Dunes SAC sites will be assessed under the Habitats Regulations (see Section 4.3.3 and 4.6);
- Applications for non-consumptive purposes will be considered on a case-by-case basis.

For **existing** licences:

- There is the presumption of renewal for time limited licences, subject to the three renewal criteria (environmental sustainability, continued justification of need, and efficient use of water) and local considerations (see Section 4.2.1);
- In areas where recent actual flows have fallen below EFI, we may seek to reduce licensed quantities as part of the renewal process (further information regarding these areas will be published in summer 2013);
- As part of the renewal process licences may be subject to change.

#### AP6 – AP7: River Lymm/Steeping

There is water available for abstraction at all except the lowest flows (Q95) where there is only restricted water available.

This means that for **new** licences:

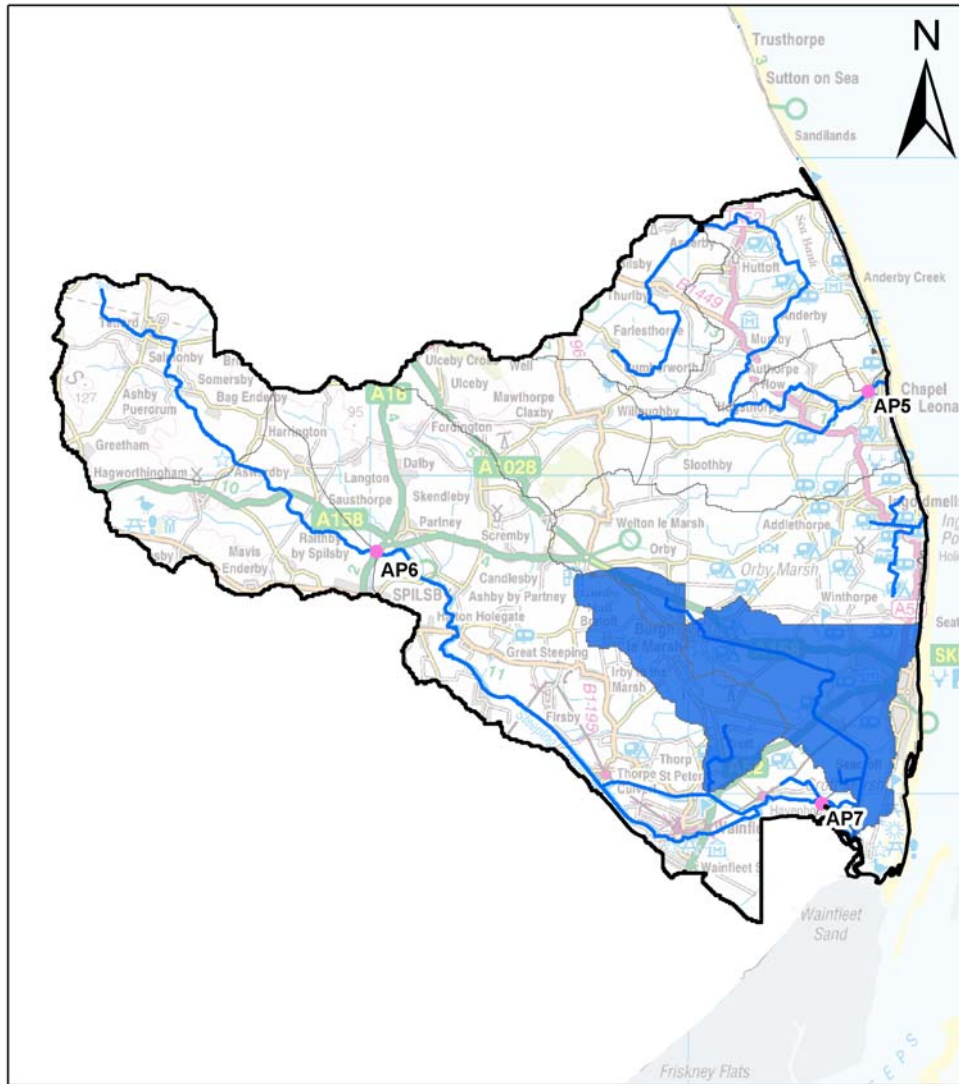
- No new unconstrained licences will be granted at any flows;
- New licences for consumptive water abstraction will be considered at high, medium and medium/low flows, subject to HOF conditions (see Table 3.4);
- Water may be available at low flows, subject to HOF conditions, if you can 'buy' (known as licence trading) the entitlement to abstract water from an existing licence holder;
- Any new abstraction licences with the potential to affect the downstream Humber Estuary SPA and SAC, and/or the Saltfleetby-Theddlethorpe Dunes SAC sites will be assessed under the Habitats Regulations (see Section 4.3.3 and 4.6);
- Applications for non-consumptive purposes will be considered on a case-by-case basis.

For **existing** licences:




- There is the presumption of renewal for time limited licences, subject to the three renewal criteria (environmental sustainability, continued justification of need, and efficient use of water) and local considerations (see Section 4.2.1);
- As part of the renewal process licences may be subject to change.

AP	AP Name	HOF restriction (MI/d)	Days per year when abstraction may be available	Approximate volume available at restriction (MI/d)	Is there a gauging station at this AP?	Additional restrictions
5	Chapel St Leonards (Willoughby High Drain)	9.1 (Q53)	193	1.5	Yes	n/a
6	Partney Bridge (River Lymm)	12.0 (Q91)	332	1.2	Yes	n/a
7	Lower River Steeping	16.2 (Q91)	332	2.2	No	Additional LDE restrictions – see Section 4.3.6

**Table 3.4 Hands-off flow conditions for the assessment points in Area B (River Lymm/Steeping) of the Steeping, Great Eau and Long Eau CAMS area.** See Table 3.3 for information on how to interpret this table.



**Legend**

-  Steeping, Great Eau and Long Eau CAMS water bodies
-  Steeping, Great Eau and Long Eau CAMS assessment points
-  Heavily modified and artificial lakes
-  Heavily modified and artificial rivers
-  Steeping, Great Eau and Long Eau CAMS rivers
-  High hydrological status water body

0 1.25 2.5 5 7.5 10 Kilometres

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Creation date 22 January 2013

**Map 3.3 Location of assessment points in Area B (River Lymm/Steeping) of the Steeping, Great Eau and Long Eau CAMS area.**

### 3.4 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. The reliability of your supply could be improved if you build a reservoir to store water abstracted when river flows are high.

More information on the reliability of water resources in the Steeping, Great Eau and Long Eau CAMS area will be published in summer 2013. To discuss the reliability of water resources in the Steeping, Great Eau and Long Eau CAMS please contact your local Integrated Environment Planning team at:

Integrated Environment Planning  
Environment Agency  
Waterside House  
Waterside North  
Lincoln  
LN2 5HA

Tel: 01522 785024  
Fax: 01522 785035

Or by email to: [AEPANGN@environment-agency.gov.uk](mailto:AEPANGN@environment-agency.gov.uk)

# 4. How we manage abstractions in the Steeping, Great Eau and Long Eau CAMS area

## 4.1 National licensing 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 Steeping, Great Eau and Long Eau CAMS area is outlined in this section. If you want to abstract water this section outlines the principles we follow in assessing your application for a licence and describes the local factors that may guide our decision.

### 4.1.1 Licence determination

Anyone wanting to take more than 20m<sup>3</sup>/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**

To protect the environment we may issue a licence with conditions. See Section 4.2 for more information.

#### **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 provide advice to encourage 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. The supply of water is limited, so we make sure that it's managed and used effectively to meet the needs of people and the natural environment. For further details on our general approach to licensing please see the document [Managing Water Abstraction](#). The supply of water is limited, so we make sure that it's managed and used effectively to meet the needs of people and the natural environment.

There are various water efficiency and demand management measures being implemented throughout the catchment, area and region. These are summarised in Table 4.1.

<b>Water efficiency and demand management measures being implemented in the Steeping, Great Eau and Long Eau CAMS area</b>	
Area	<ul style="list-style-type: none"> <li>All renewal applications have to meet the water efficiency test.</li> <li>Environment Officers' undertaking compliance and enforcement checks will look for evidence of water being used efficiently.</li> <li>Area officers engage with customers on an opportunistic basis to encourage water efficient use, including using resources provided by the Water Company to share with schools and in the local community.</li> </ul>
Region	<ul style="list-style-type: none"> <li>An Anglian Region Water Efficiency Group exists and consists of the Environment Agency, water companies and other relevant organisations. The group's primary objective is to develop and share best practice of water efficiency and to raise awareness of the need for and opportunities to achieve water efficiency.</li> <li>There are various agricultural water efficiency projects underway. Water security groups have been set up and consist of regional and area Environment Agency staff. The approach is to encourage farmers to improve water security. For example, letters have been sent to farmers including information on extending the irrigation season, the impact of climate change, sharing resources and high flow reservoirs.</li> </ul>
Steeping, Great Eau and Long Eau	<ul style="list-style-type: none"> <li>Quarry operators are encouraged to maximise the amount of local groundwater recharge they provide so that water is retained locally. A research paper on this subject has been produced by Symonds Group Ltd (Huxley <i>et al</i>, 2004).</li> <li>Rainwater harvesting is promoted, particularly amongst the agriculture and industrial sector. A suite of booklets has been produced in co-operation with Natural England, Cranfield University, NFU, and the UK Irrigation Association which cover many aspects of water use in the agriculture sector. These are used when possible to help our customers explore the various options available to them.</li> <li>Spray irrigators are provided with advice on water efficiency and irrigation scheduling.</li> </ul>

**Table 4.1 Water efficiency and demand management measures being implemented in the Steeping, Great Eau and Long Eau CAMS area.**

### 4.1.2 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.

### 4.1.3 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.

### 4.2.1 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. On the other hand licence applications for high flow storage will normally be granted with a longer timescale because of the large investment required by the applicant and the reduction of impact on the environment.

4.5% of the licences in Steeping, Great Eau and Long Eau CAMS are time limited. CEDs occur every twelve years. The next CED for Steeping, Great Eau and Long Eau CAMS is 2016 and the subsequent one is 2028.

There is a presumption of renewal with time limited licences provided that the renewal tests can be satisfied and there are no other legal obstacles. The renewed licence will be subject to conditions considered necessary for the sustainable management of the resource. The three renewal tests are:

- environmental sustainability
- continued justification of need
- efficient use of water

If a licence is unlikely to be renewed or will only be renewed on more restrictive terms that significantly affect the use of that licence, we will aim to give six years' notice of non-renewal.

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

### 4.2.2 Hands-off flow conditions

We manage water resources and protect the environment and other water users by applying hands-off flow (HOF) or hands-off level (HOL) conditions to abstraction licences. HOF conditions specify that if the flow in the river drops below that which is required to protect the environment then abstraction must be reduced or stopped altogether, hence 'hands-off flow'. Each HOF is linked to an AP and is dependent on the resource availability at that AP. We base HOF conditions on the best available data and information about in-river needs and the minimum flows required to sustain ecology and protect other abstractors. 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.

Rivers that are over abstracted, or have little water available at low flows, will have relatively high HOF thresholds. Where more water is available, we will apply lower or no HOF conditions. Abstraction from such rivers will be more reliable. In cases where there is water available at all flows we may apply a Minimum Residual Flow (MRF) to protect very low flows. We'll decide this on a case-by-case basis. See Section 3.3 for information on the HOF conditions that may apply to new abstractions from the Steeping, Great Eau and Long Eau CAMS area.

Further explanation of how we set and manage HOF and HOL conditions can be found in our document: [Abstraction licence conditions](#).



### **4.2.3 Hands-off level conditions**

HOL conditions allow us to reduce or stop abstraction when groundwater levels in a borehole fall below a specified threshold. Our hydro-geologists set HOL conditions using their local knowledge and expertise. HOL conditions allow us to protect the environment and other water users by ensuring groundwater abstractions do not negatively impact surface water features (such as wetlands), reduce base flow to rivers, or reduce the overall resources of the aquifer.

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

## **4.3 Local features that may affect water availability in the Steeping, Great Eau and Long Eau CAMS area**

In addition to ensuring a sufficient water resource allocation for the river environment, other local features may affect the availability of water for abstraction.

### **4.3.1 Heavily Modified and Artificial Water Bodies (HMWB & AWB)**

Some water bodies may be designated as 'artificial' or 'heavily modified'. This is because they have been created or modified to suit a particular purpose such as water supply, flood protection or navigation. There are no HMWB or AWB in the Steeping, Great Eau and Long Eau CAMS area.

### **4.3.2 High ecological status water bodies**

High ecological status water bodies are those that are close to a natural condition. We restrict abstraction in these water bodies to maintain their close to natural condition. There are no high ecological status water bodies within the Steeping, Great Eau and Long Eau CAMS area.

### **4.3.3 Sites of wildlife conservation interest**

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.

There are a number of nationally and internationally designated sites of ecological and conservation importance within the Steeping, Great Eau and Long Eau catchment. Several of the sites are water dependent, and therefore potentially impacted by river flows and abstraction. These sites are shown on Map 4.1. The following sites are of particular importance: Saltfleetby-Theddlethorpe Dunes SSSI and SPA; Gibraltar Point SSSI, NNR, SAC, SPA and Ramsar site; and the Humber Estuary SPA and Ramsar site. Further information about the implications of these sites on water abstraction licensing can be found in Section 4.6 – Restoring Sustainable Abstraction.

Other notable local water dependent sites of conservation importance within the CAMS area include Calceby Marsh SSSI, Swaby Valley SSSI, Mavis Enderby Valley SSSI and New England Valley SSSI.

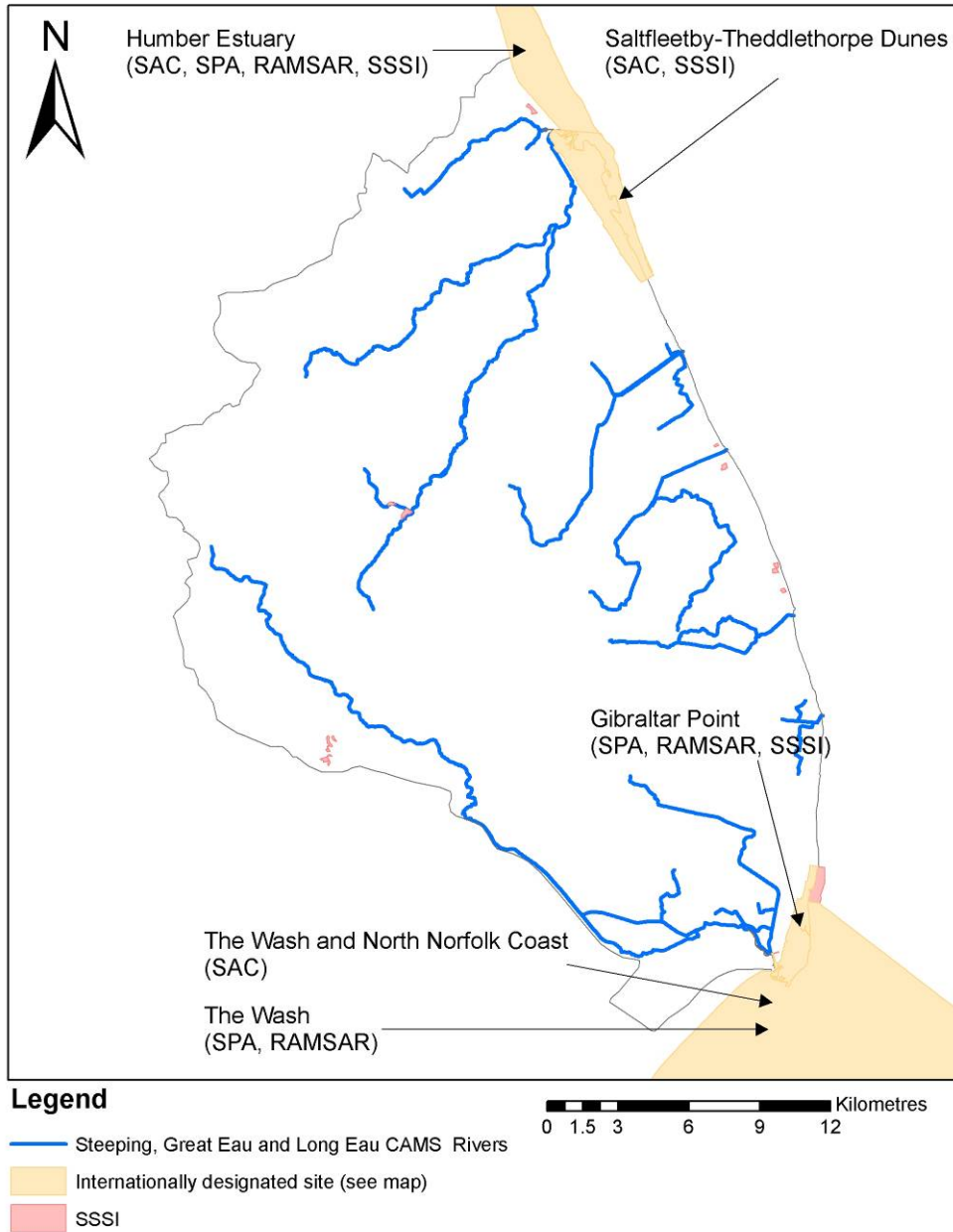
### **4.3.4 Recreation and fishing**

The coastal fringe and Lincolnshire Wolds AONB are popular recreational areas containing a wide variety of walks, cycle routes and bridleways. Recreational fishing is popular in this part of Lincolnshire. Some trout fishing is practiced on the River Lymm with the bulk of recreation angling taking place further downstream on the River Steeping and Wainfleet relief channel.

### 4.3.5 Navigation

Use of the waterways in the Steeping, Great Eau and Long Eau CAMS area is largely confined to light boats and canoes where access to the waterway is possible. Some recreational sailing also takes place along the East Coast, particularly around Skegness and Mablethorpe.

Steeping, Great Eau and Long Eau CAMS  
designated water dependent conservation sites



Creation date 3 December 2012

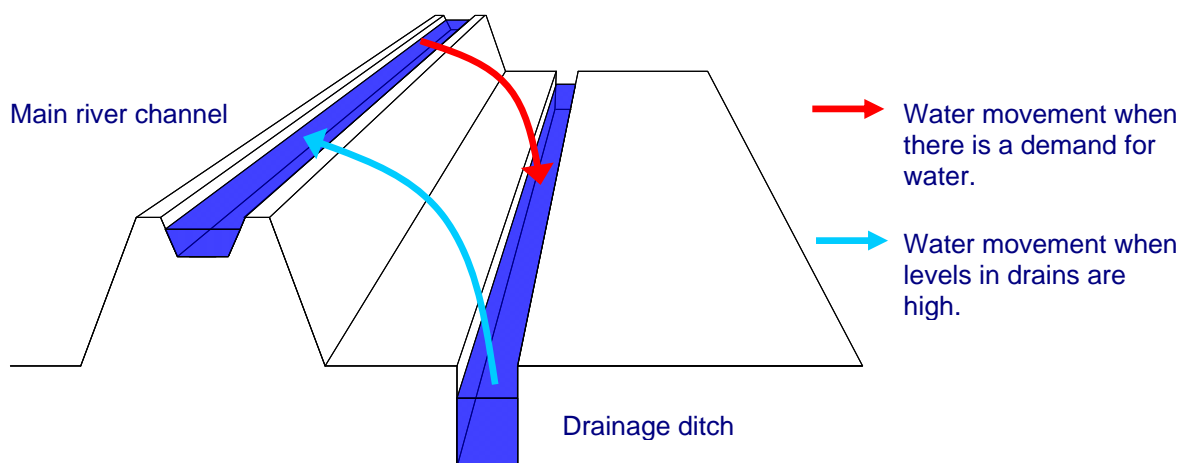
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**Map 4.1 Designated water dependent conservation sites in the Steeping, Great Eau and Long Eau CAMS area.**

### 4.3.6 Level dependent environments (LDE)

Level dependent environments are characterised by a network of river channels flowing above the level of the surrounding land. The low-lying land has a network of drainage ditches, which remove water from the low-lying land into the main river channels during the winter/high flows and provide an irrigation resource during the summer/low flows (see Figure 4.1).



**Figure 4.1 The main features of a characteristic level dependent environment.**

The Steeping, Great Eau and Long Eau CAMS contains level dependent environments (see Map 4.2). The Steeping, Great Eau and Long Eau CAMS area contains two level dependent environments; the Great Eau and the Lower Steeping. We have divided these areas into units, known as level dependent management units (see Table 4.2).

Level Dependent Environment	Associated Level Dependent Management Units
The Great Eau	Theddlethorpe
The Lower Steeping	River Steeping

**Table 4.2 Level dependent environments and management units in the Steeping, Great Eau and Long Eau CAMS area.**

Drainage of both level dependent environments is operated by the Lindsey Marsh IDB. Parts of the IDB area are drained to the highland carriers by land drainage pumps. The remaining areas drain direct to the North Sea by land drainage pump or gravity. All pumping stations are operated by Lindsey Marsh IDB except for Chapel St Leonards and Croft Lane (in the Lower Steeping LDE) which are operated by the Environment Agency.

We will consult the relevant IDB for any licence that is considered in an IDB area. Our assessment of water resources in the LDEs is linked to the assessment of the main river channels (highland carriers). When considering applying for an abstraction licence in an LDE reference should be made to the water resource assessment in the main river channel (see Table 4.3).

Level Dependent Environment	Refer to assessment point
The Great Eau	AP3 Cloves Bridge (see Section 3.3.1)
The Lower Steeping	AP6 Partney Bridge (see Section 3.3.2)

**Table 4.3 Level dependent environments and associated water resource assessment points in the Witham CAMS.**

Further information on each of these level dependent environments and the additional licence restrictions which may apply to new licences in these areas is provided below. Licence restrictions in the LDMUs will be determined on a case-by-case basis.

#### The Great Eau LDE

The Great Eau LDE covers approximately 30.6 km<sup>2</sup> and is ultimately drained by Theddlethorpe pumping station into the Great Eau. The upstream part of the pumped catchment is non-level dependent, whereas the low-lying coastal plain areas between the highland carriers are level dependent environments. Drainage of these low-lying areas is operated by the Lindsey Marsh IDB.

environments. Drainage of these areas is operated by the Lindsey Marsh Internal Drainage Board. Parts of the Internal Drainage Board area are drained to the highland carriers by land drainage pumps. The remaining areas drain direct to the North Sea by land drainage pump or gravity. A number of abstractions from the highland carrier into the internal drains are controlled by licences held by the Lindsey Marsh IDB.

In most cases licences for abstraction from the Great Eau LDE will contain the following conditions:

1. A HOL condition set at the Cloves Bridge (assessment point 3), and/or
2. A HOF condition set at Little Carlton (assessment point 1) and/or a HOF condition set at Claythorpe (assessment point 2), and,
3. A site specific HOL condition relevant to the local level management system to be agreed following liaison with the relevant IDB.

Through the use of the above conditions (1 and/or 2 and 3) the resources of the main river and local IDB network are protected in addition to the rights of other water users.

### **The Lower Steeping LDE**

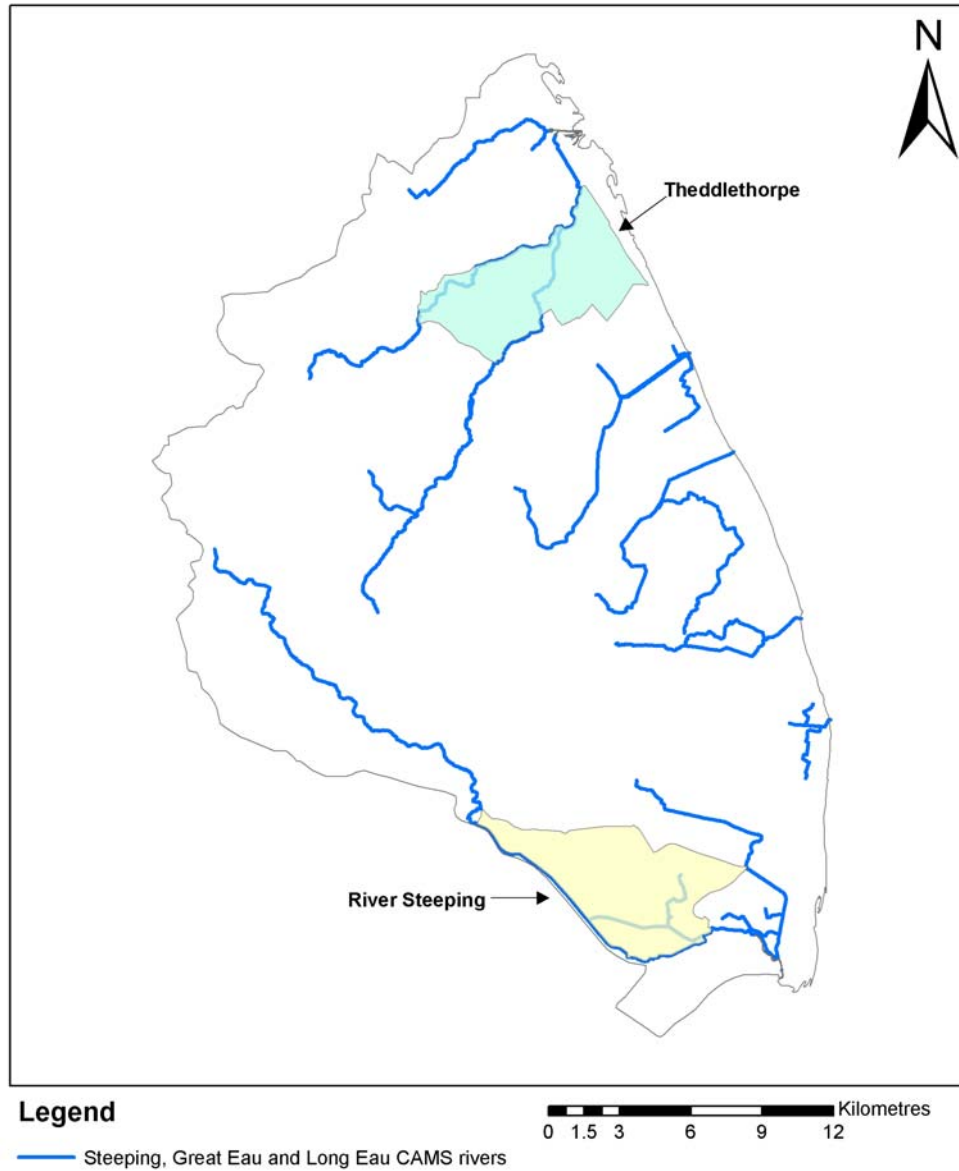
The Lower Steeping LDE covers an area of approximately 33.4 km<sup>2</sup>. The area consists of the catchments to Crown, Thorpe Culvert and Croft Lane pump stations which discharge direct to the Lower Steeping. The Crown and Thorpe Culvert pumping stations discharge directly to the Lower Steeping. The Croft Lane pumping station (operated by the Environment Agency) discharges from the Cowcroft Drain to the Lower Steeping. The Cowcroft Drain is in effect a highland carrier through the LDE and the catchment is not part of the LDE. Abstractions from the highland carrier to the drains in the area are controlled by licences held by the Lindsey Marsh IDB.

Burgh Sluice, Gibraltar Point and Wainfleet pump stations discharge direct to tide and are not assessed as part of the Lower Steeping LDE.

In most cases licences for abstraction from the Lower Steeping LDE will contain the following conditions:

4. A HOL condition set at the Havenhouse Sluice, and/or
5. A HOF condition set at Partney (surface water assessment point 6), and,
6. A site specific HOL condition relevant to the local level management system to be agreed following liaison with the relevant IDB.

Through the use of the above conditions (1 and/or 2 and 3) the resources of the main river and local IDB network are protected in addition to the rights of other water users.



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**Map 4.2 Level dependent environments in the Steeping, Great Eau and Long Eau CAMS area.**

### 4.3.7 Estuaries/coast

The River Steeping flows to The Wash embayment, discharging via Haven House Sluice. The Wash is the largest estuarine system in the UK, a mostly shallow embayment where the Rivers Ouse, Nene, Welland and Witham drain into the North Sea. Between them these rivers drain an area of approximately 15,000 km<sup>2</sup>. Despite freshwater inputs from the very large catchment area, marine processes dominate the physical and biological character of the embayment. The Wash plays an extremely important role in relation to the wider coastal and marine environment of the region.

The Wash is designated as a SSSI and forms part of The Wash and North Norfolk Coast marine SAC, The Wash SPA and The Wash Ramsar site. The Wash SSSI was subject to an appropriate assessment for the Habitats Directive Review of Consents (HD RoC), which was completed in April 2007. The Wash SSSI was designated as a medium priority HD RoC site. It was concluded that existing water resources permissions do not have an adverse effect on the integrity of the site.

Between the Wash and Skegness (a distance of approximately 3 miles) lies Gibraltar Point. This site is recognised nationally and internationally for its species and habitats being designated a SSSI, NNR and SPA.

The other main water courses within the catchment area discharge into the Humber Estuary. The Humber Estuary supports large numbers of waterfowl/birds (especially geese, ducks and waders) during the migration periods and in winter. It also supports important breeding populations of terns and raptors in summer. The sites importance for habitats and species underlies its designation as an SPA, SAC and Ramsar wetland of international importance. South of the Humber Estuary is the Saltfleetby-Theddlethorpe Dunes SSSI, NNR and SAC.

The Humber Estuary was subject to a Habitats Directive Review of Consents assessment (HD RoC), which was completed in 2008. The Humber Estuary was classified as a medium priority HD RoC site and the conclusion was made that existing water resources permissions did not have an adverse effect on the integrity of the site.

Any new abstraction licences with the potential to affect the internationally designated sites described above will be assessed under the Habitats Directive.

## 4.4 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 either 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 (see Table 1.1).



CAMS water resource availability colour	Our approach to trading
High hydrological status	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 4.4 The potential for licence trading in water bodies of a particular CAMS water resource availability colour**

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

## 4.5 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.

## 4.6 Restoring Sustainable Abstraction (RSA)

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 Steeping, Great Eau and Long Eau CAMS there are 12 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.

### Investigating 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 (SACs) and Special Protection Areas (SPAs).

For the Steeping, Great Eau and Long Eau CAMS the following Habitats Directives sites will be considered:

- The Wash SAC and SPA
- The Humber Estuary SAC and SPA
- The Gibraltar Point SPA
- The Saltfleetby-Theddlethorpe Dunes SAC

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.



# References

Huxley, C.L., Gill, T.S., Carroll, L.S. and Thompson, A. (2004) Optimising the Efficiency of Recharge Features as a Mechanism for Mitigating the Impacts of Quarry Dewatering. Unpublished report, Capita Symonds Ltd, East Grinstead. Available at [www.sustainableaggregates.com](http://www.sustainableaggregates.com).

# 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.
Aquifer	A geological formation that can store and transmit groundwater in significant quantities.
Assessment point (AP)	Point at which the flow from upstream catchment is assessed.
Borehole	Well sunk into water bearing rock from which water will be pumped.
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.
Compensation release	Water released from reservoirs to maintain a flow in the river downstream.
Designated water dependent sites	Legally defined nationally and internationally important sites potentially affected by water management or water quality issues.
Discharge	The release of substances (i.e. water, sewage, etc.) into surface waters.
Environmental flow indicator (EFI)	Flow indicator to prevent environmental deterioration of rivers, set in line with new UK standards set by UKTAG.
EU Water Framework Directive (WFD)	First major review of European water policy. Seeks to improve water quality in rivers and groundwater in an integrated way (see Integrated River Basin Management)
Full licence	A licence to abstract water from a source of supply over a period of 28 days or more
Gauging station	A site where the flow of a river is measured.
Groundwater	Water that is contained in underground rocks.
Habitats Directive	A European directive on Conservation of Natural Habitats and of Wild Flora and Fauna. The Directive is implemented in the UK by the Conservation (Natural Habitats & c.) Regulations 1994 – commonly known as the ‘Habitats Regulations’. The Directive created a network of protected areas across the European Union known as ‘Natura 2000’ sites.
Hands-off flow (HOF)	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 (HOL)	A river flow or borehole (groundwater) level below which an abstractor is required to reduce or stop abstraction.
Hydrology	The study of Earth’s water, in particular of water under and on the ground before it reaches the ocean or before it evaporates.
Impoundment	An impoundment is a structure that obstructs or impedes the flow of inland water, such as a dam, weir or other constructed works.
Integrated River Basin Management	The method by which the EU Water Framework Directive will be implemented to ensure that all requirements and pressures on the water environment are taken into account.
Internal Drainage Board (IDB)	A local land drainage authority with powers to raise finance and do works.
Irrigation	The artificial distribution and application of water through man made systems

	in order to stimulate crop growth.
Level dependent environment (LDE)	A network of river channels flowing above the levels of the surrounding land. The low-lying land has a network of drainage ditches, which remove water from the low-lying land into the main river channels during the winter and provide an irrigation resource during summer.
Licence determination	A decision by the Environment Agency on what terms to grant or refuse a licence application, by reference to regulatory powers and duties.
Minimum residual flow (MRF)	The flow set at a river gauging station to protect downstream uses. When flow falls below this level controlled abstractions are required to cease.
Natural flow	The river flows that would exist in the absence of any artificial impacts.
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 <sup>3</sup> /d.
Public water supply (PWS)	Term used to describe the supply of water provided by a water company.
Ramsar site	A site of international conservation importance classified at the 'Convention of Wetlands of International Importance' 1971, which was ratified by the UK Government in 1976.
Review of Consents	The procedure by which the Environment Agency as a competent authority will apply the Habitats Regulations to review all relevant existing discharge consents, abstraction licences, permission and activities which are likely to affect a designated European site.
Revocation	The cancellation of a licence and all associated rights and benefits.
Site of Special Scientific Interest (SSSI)	An area given a statutory designation by Natural England of the Countryside Council for Wales because of its nature conservation value.
Special Area of Conservation (SAC)	An area classified under the EC Habitats Directive and agreed with the EU to contribute to biodiversity by maintaining and restoring habitats and species.
Special Protection Area (SPA)	An area classified under the EC Birds Directive to provide protection to birds, their nests, egg and habitats.
Surface water	This is a general term used to describe all water features such as rivers, streams, springs, ponds and lakes.
Time limited licences	Licence with specified end date.
Transfer licence	A licence to abstract water from one source of supply over a period of 28 days or more for the purpose of; <ol style="list-style-type: none"> <li>1. transferring water to another source of supply; or,</li> <li>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);</li> </ol> without intervening use.
Water body	Units of either surface water or groundwater at which assessments are completed for WFD.

# List of abbreviations

AODN	Above Ordnance Datum Newlyn
AP	Assessment Point
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
EU	European Union
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
IDB	Internal Drainage Board
LDE	Level Dependent Environment
LDMU	Level Dependent Management Unit
MI/d, MI/day	MI = megalitres = 1,000,000 litres = 1,000 cubic metres = 1,000 m <sup>3</sup> = 220,000 gallons MI/d = MI/day / MI per day, = thousand cubic metres per day
maOD	Metres above ordnance datum
MRF	Minimum Residual Flow
NFU	National Farmers' Union
PWS	Public water supply
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 Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UKTAG	United Kingdom's Technical Advisory Group
WB	Water body
WFD	Water Framework Directive

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