The Nene 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.

Sue Longstone
Area Manager
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1. About CAMS

This Catchment Abstraction Management Strategy (CAMS) sets out how we will manage water abstraction in the Nene catchment. 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 20 m$^3$/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
- or visit our website at www.environment-agency.gov.uk.

Sustainable abstraction

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

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. The Nene CAMS area

This section provides some background information on the Nene CAMS area (see Map 2.1)

Hydrology

The River Nene rises in Northamptonshire and flows through Northampton, Peterborough, Wisbech and Sutton Bridge before discharging into the Wash. The headwaters of the River Nene are on the western boundary of the catchment in the upper reaches of the Kislingbury Branch and the Brampton Branch. These rivers have a steep gradient down to Northampton where they join together along with the Wootton Brook.

Downstream of Northampton the gradient of the main Nene is more gradual as the river flows in a north easterly direction towards Peterborough. Between Northampton and Peterborough the main tributaries are the River Ise, the Harpers Brook and the Willow Brook which all flow into the Nene from the north west. In the lower fenland areas the low gradients mean that water moves slowly. In large parts of these areas there is a reliance on pumped drainage systems.

Urban areas

The main urban areas such as Peterborough, Northampton, Daventry, Corby, Wellingborough and Kettering are clustered within the upper sections of the catchment and have expanded significantly over the last 20 - 30 years. It is expected that urban areas across the catchment will continue to expand with further proposals for housing developments.

Geology and topography

The catchment is characterised by significantly different landscapes. To the east of Peterborough the catchment is typical low lying fen, rarely reaching 10m above sea level. The local Internal Drainage Boards (IDBs) maintain a network of drains and control water levels in this area. West of Peterborough much of the landscape is undulating, dissected by the valley of the River Nene and its tributaries.

The Nene CAMS area does not contain a sizeable groundwater body, however the Blisworth Limestone, Cornbrash Limestone, and the Northampton Sands are considered to be locally important minor aquifers.

Main water resource pressures

The River Nene is an important source of raw water to fill Pitsford and Rutland Water reservoirs for public water supply. It is also important for navigation and recreational uses ranging from fishing to boating. The navigable River Nene links the Grand Union Canal to the River Great Ouse via the Middle Levels. The navigable section is accessed via the Grand Union Canal at Northampton and runs for 91.5 miles ultimately connecting with the Wash.

There is no significant groundwater abstraction in the catchment, due to the absence of major aquifers. In the east of the catchment the majority of abstraction is for spray irrigation.

Land use

The majority of the catchment is used for agricultural purposes. Farming is more productive in the downstream sections, and the dominant crops grown include cereals, sugar beet and potatoes. In contrast, to the west of Peterborough farming is predominantly arable or mixed livestock.

Mineral extraction activities occur within the Nene catchment, predominantly for sand, gravel and limestone. Historical mineral extraction has left the Nene Valley with an extensive series of lakes, some of which have great conservation value (e.g. Higham Ferrers Gravel Pits SSSI and the Upper Nene Valley Gravel Pits SPA). Other land uses in the catchment include forestry. There are a number of Forestry Commission managed woodlands, such as Bedford Purlieus and Salcey Forest (SSSI). Sections of these woods are leased out and managed as nature reserves by the Northamptonshire Wildlife Trust.

Biodiversity

The Nene Washes, which lie downstream of Peterborough between the ‘new’ channel of the Nene and Morton’s Leam, have been classified as a Special Protection Area (SPA) and Ramsar Site. The Washes are an important flood risk management asset. The area floods seasonally providing an important area of wet grassland habitat for a wide range of bird species.
Map 2.1 Nene Catchment Abstraction Management Strategy (CAMS) area.
3. Water resource availability in the Nene 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 Nene 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 River Nene at Orton Lock (assessment point 15) exceeds 415.8 Ml/d for 50% of the year (i.e., Q50 = 415.8 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 what 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 resource 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.
**High hydrological status**

- There is more water than required to meet the needs of the environment.
- Very little actual abstraction occurs and the river shows virtually undisturbed, or close to natural, flow conditions.
- 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 will be considered depending on local and downstream impacts.

**Restricted water available for licensing**

- Fully licensed (FL) flows fall below the EFI.
- 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.
- 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 (GES) (as required by the Water Framework Directive). Note: we are currently investigating water bodies that are not supporting GES / GEP.
- No further consumptive licences will be granted. Water may be available if you can buy (known as licence trading) the amount equivalent to that recently abstracted from an existing licence holder.

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### 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 flows 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 of each of the water bodies in the Nene 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.

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

- 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.
- There may be water available for abstraction in discharge rich catchments. Please contact us to find out more.
3.2.2 Groundwater

Map 3.1 shows the groundwater resources in the Nene CAMS area. We are currently developing a groundwater model which will further enable us to assess groundwater resources in the future.

Lincolnshire Limestone

There are no significant groundwater resources in the Nene CAMS area, reflected by the lack of large groundwater abstractions. The southern extremities of the principal Lincolnshire Limestone aquifer reach the Nene catchment. The sections in the Nene CAMS area are largely outcrops where rainfall can recharge the aquifer. This is not a reliable resource of groundwater, although it does contribute to river flows and some small-scale supplies.

The resources in the Lincolnshire Limestone groundwater 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.

Secondary aquifers

The remainder of the Nene catchment is dominated by secondary aquifers such as Northampton Sands Formation and to a lesser extent Marlstone Rock Formation, which are relatively widely exploited for small-scale abstractions and supporting surface water features.

The Northampton Sand is a ferruginous sandstone which is generally 5 – 8 m thick, but can be up to 20 m thick. Where it outcrops it is highly weathered and very porous. Springs often occur where the Northampton Sand forms a junction with the underlying Whitby Mudstone. A lot of the ironstone has been worked out in the past but these workings are now largely backfilled and restored; this may have affected localised recharge mechanisms.

Marlstone Rock Formation is a calcareous ironstone typically about 3 m thick. It is the most important aquifer in the Middle Lias, with groundwater flow through fissures as it is very fine-grained. Flow is generally to the south-east, following the gentle dip of the strata. Recharge is considered to be high compared to abstraction and contribution to river flow, and so it is thought to contribute water to other formations.

There may be the opportunity for consumptive abstraction from these secondary aquifers providing there is no hydraulic connectivity with the Lincolnshire Limestone or surface water features.
Map 3.1 Groundwater resources in the Nene CAMS area.
3.3 Abstraction licensing strategy

This section describes the licensing strategy and available surface water resource in the Nene CAMS area. To make it easier to assess local water resource availability, we have divided the Nene CAMS area into four 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 key locations within the CAMS area (known as assessment points – see Section 3.1.1). For location specific information on water resource availability and detailed information on hands-off flow conditions see the maps and tables respectively.

Within the Nene CAMS area water resource availability is largely driven by significant strategic abstractions at Duston Mill (assessment point 4) and Wansford (assessment point 14). These abstractions have appropriate HOF conditions applied. All other abstractions within the Nene CAMS area are determined with reference to AP6 and AP14.

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 - Upper Nene

Area A contains seven assessment points (see Map 3.2). The water resource availability and resultant licensing implications are discussed below and in Table 3.3. For location specific information on water resource availability in Area A see Map 3.2.

Within Area A there is notable variation in the local water resource availability at different flows. Therefore, the following discussion is divided into groups of assessment points with similar water resource availability. In each case, the descriptions apply to the water bodies at the assessment point and those water bodies upstream, unless otherwise stated.

AP1 – AP4: Upper Nene and Whilton Brook

For the majority of this area there is restricted water available for licensing at high flows, but no water available at lower flows. River flows during low and medium flow periods are appropriately protected by HOF conditions.

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 extremely high flows (occurring less than 10% of the time), subject to HOF conditions (see Table 3.3);
- Water may be available at high flows (occurring 30% - 10% of the time), 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 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 SAC and/or SPA sites will be assessed under the Habitats Regulations (see Sections 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, (identified in red on Map 3.2) we may seek to reduce licensed quantities as part of the renewal process;
- As part of the renewal process licences may be subject to change.

Please note that the water body located at Daventry has no water available for licensing at any flow (see Map 3.2). Consequently no new licences for water abstraction will be granted in this location. Similarly, the water body immediately north of Daventry has no water available for licensing at medium to low flows. Consequently no new licences for water abstraction will be granted at these flows in this location.
**AP5 & AP7: Brampton Branch**

There is restricted water available for licensing 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 high flows (occurring less than 24% of the time), subject to HOF conditions (see Table 3.3);
- Water may be available at lower 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 SAC and/or SPA sites will be assessed under the Habitats Regulations (see Sections 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.

**AP6: Brampton Branch**

There is no water available for licensing in the water bodies to the east and west of AP6 (see Map 3.2).

This means that for **new** licences:

- No new licences for consumptive water abstraction will be granted at any flow;
- Water may be available, subject to HOF conditions, if you can buy (known as licence trading) the amount equivalent to that recently abstracted from an existing licence holder;
- 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 (identified in red on Map 3.2), we may seek to reduce licensed quantities as part of the renewal process;
- As part of the renewal process licences may be subject to change.
<table>
<thead>
<tr>
<th>AP</th>
<th>AP Name</th>
<th>HOF Restriction (Ml/d)</th>
<th>Days per year when abstraction may be available</th>
<th>Approximate volume available at restriction (Ml/d)</th>
<th>Is there a gauging station at this AP?</th>
<th>Additional restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Weedon</td>
<td>71.5 (Q10)</td>
<td>36</td>
<td>55.7</td>
<td>No</td>
<td>n/a</td>
</tr>
<tr>
<td>2</td>
<td>Dodford</td>
<td>163.2 (Q10)</td>
<td>36</td>
<td>131</td>
<td>Yes</td>
<td>n/a</td>
</tr>
<tr>
<td>3</td>
<td>Wootton Brook</td>
<td>131.7 (Q10)</td>
<td>36</td>
<td>105</td>
<td>Yes</td>
<td>n/a</td>
</tr>
<tr>
<td>4</td>
<td>Duston Mill</td>
<td>321.7 (Q10)</td>
<td>36</td>
<td>107.1</td>
<td>No</td>
<td>n/a</td>
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<tr>
<td>5</td>
<td>Brixworth</td>
<td>37.5 (Q24)</td>
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<td>48.8</td>
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<td>6</td>
<td>Merry Tom</td>
<td>65.4 (Q24)</td>
<td>87</td>
<td>38.1</td>
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<tr>
<td>7</td>
<td>St Andrews Mill</td>
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<td>39.5</td>
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<td>n/a</td>
</tr>
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Table 3.3 Hands-off flow conditions for the assessment points in Area A (Upper Nene and Whilton Brook) of the Nene 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 (Weedon) any new abstraction licence will not be able to abstract water if the river flow falls below 71.5 Ml per day. This flow is exceeded 10% of the time (Q10). Therefore, abstractions are likely to only be possible for 10% of the year (i.e., approximately 36 days). Given the amount of time river flows exceed 71.5 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 55.7 Ml of water available for abstraction per day at Weedon.

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.
Map 3.2 Water resource availability colours for Area A (Upper Nene) of the Nene CAMS area including downstream requirements.
3.3.2 Area B - Main Nene and Ise

Area B contains four assessment points (see Map 3.3). The water resource availability and resultant licensing implications are discussed below and in Table 3.4. For location specific information on water resource availability in Area B see Map 3.3.

There is restricted water available for licensing in Area B. River flows during low flow periods are appropriately protected by HOF conditions.

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 flows (occurring less than 24% of the time), 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 entitlement to abstract water from an existing licence holder;
- Any new abstraction licences with the potential to affect the downstream SAC and/or SPA sites will be assessed under the Habitats Regulations (see Sections 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.

<table>
<thead>
<tr>
<th>AP</th>
<th>AP Name</th>
<th>HOF Restriction (Ml/d)</th>
<th>Days per year when abstraction may be available</th>
<th>Approximate volume available at restriction (Ml/d)</th>
<th>Is there a gauging station at this AP?</th>
<th>Additional restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Barford Bridge</td>
<td>53.2 (Q24)</td>
<td>87</td>
<td>45.4</td>
<td>Yes</td>
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<td>121.6</td>
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<td>n/a</td>
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<tr>
<td>10</td>
<td>Main Nene</td>
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<td>87</td>
<td>451.2</td>
<td>No</td>
<td>n/a</td>
</tr>
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<td>11</td>
<td>Harper's Brook</td>
<td>39.1 (Q24)</td>
<td>87</td>
<td>35.6</td>
<td>Yes</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Table 3.4 Hands-off flow conditions for the assessment points in Area B (Main Nene and Ise) of the Nene CAMS area. See Table 3.3 for information on how to interpret this table.
Map 3.3 Water resource availability colours for Area B (Main Nene and Ise) of the Nene CAMS area including downstream requirements.
3.3.3 Area C - Main Nene and Willow Brook

Area C contains four assessment points (see Map 3.4). The water resource availability and resultant licensing implications are discussed below and in Table 3.5. For location specific information on water resource availability in Area C see Map 3.4.

There is restricted water available for licensing. River flows during low and medium flow periods are appropriately protected by HOF conditions.

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 flows (occurring less than 24% of the time), subject to HOF conditions (see Table 3.5);
- Water may be available at lower 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 SAC and/or SPA sites will be assessed under the Habitats Regulations (see Sections 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.

<table>
<thead>
<tr>
<th>AP</th>
<th>AP Name</th>
<th>HOF Restriction (Ml/d)</th>
<th>Days per year when abstraction may be available</th>
<th>Approximate volume available at restriction (Ml/d)</th>
<th>Is there a gauging station at this AP?</th>
<th>Additional restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Blatherwycke Lake</td>
<td>75.9 (Q24)</td>
<td>87</td>
<td>91.9</td>
<td>No</td>
<td>n/a</td>
</tr>
<tr>
<td>13</td>
<td>Fotheringhay</td>
<td>92.2 (Q24)</td>
<td>87</td>
<td>101.0</td>
<td>Yes</td>
<td>n/a</td>
</tr>
<tr>
<td>14</td>
<td>Wansford</td>
<td>907.4 (Q24)</td>
<td>87</td>
<td>664.1</td>
<td>Yes</td>
<td>n/a</td>
</tr>
<tr>
<td>15</td>
<td>Orton Lock</td>
<td>702.5 (Q24)</td>
<td>87</td>
<td>310.2</td>
<td>Yes</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Table 3.5 Hands-off flow conditions for the assessment points in Area C (Main Nene and Willow Brook) of the Nene CAMS area. See Table 3.3 for information on how to interpret this table.
Map 3.4 Water resource availability colours for Area C (Main Nene and Willow Brook) of the Nene CAMS area including downstream requirements.
3.3.4 Area D - Lower Nene and Nene Washes

Area D contains one assessment point (see Map 3.5). The water resource availability and resultant licensing implications are discussed below and in Table 3.6. For location specific information on water resource availability in Area D see Map 3.5.

Within Area D there is notable variation in the local water resource availability at different flows upstream and downstream of AP16. Therefore, the following discussion is separated into those water bodies upstream of AP16 and those water bodies downstream of AP16.

Upstream of AP16

There is restricted water available for licensing. River flows during low flow periods are appropriately protected by HOF conditions.

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 flows (occurring less than 24% of the time), subject to HOF conditions (see Table 3.6);
- Water may be available lower 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 SAC and/or SPA sites will be assessed under the Habitats Regulations (see Sections 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.

Downstream of AP16

The drainage networks in this area are managed by local Internal Drainage Boards (see Section 4.3.6 for more information). We will consult the relevant IDB for any licence that is considered in an IDB area. The water bodies downstream of AP16 have water available for abstraction at high and medium flows, and restricted water available at lower 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 3.6);
- Water may be available lower 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 SAC and/or SPA sites will be assessed under the Habitats Regulations;
- Applications for non-consumptive purposes will be considered on a case-by-case basis.

and 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.

Customers wishing to submit applications for water abstraction in the area north of Long Sutton are referred to the Holbeach Marsh Abstraction Licensing Strategy (see Section 4.3.6).
<table>
<thead>
<tr>
<th>AP</th>
<th>AP Name</th>
<th>HOF Restriction (ML/d)</th>
<th>Days per year when abstraction may be available</th>
<th>Approximate volume available at restriction (ML/d)</th>
<th>Is there a gauging station at this AP?</th>
<th>Additional restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Nene Downstream Boundary</td>
<td>676.7 (Q24)</td>
<td>87</td>
<td>242.2</td>
<td>No</td>
<td>Specific LDE restrictions – see Section 4.3.6</td>
</tr>
</tbody>
</table>

Table 3.6 Hands-off flow conditions for the assessment points in Area D (Lower Nene and Nene Washes) of the Nene CAMS area. See Table 3.3 for information on how to interpret this table.
Map 3.5 Water resource availability colours for Area D (the Lower Nene and Nene Washes) of the Nene CAMS area including downstream requirements.
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.

Table 3.7 shows the resource availability colour associated with the percentage reliability of consumptive abstraction. Map 3.6 gives an indication of the resource reliability in Nene area expressed as percentage of time.

<table>
<thead>
<tr>
<th>Resource reliability colour</th>
<th>Percentage of the time additional consumptive resource may be available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consumptive abstraction available less than 30% of the time.</td>
</tr>
<tr>
<td></td>
<td>Consumptive abstraction available at least 30% of the time.</td>
</tr>
<tr>
<td></td>
<td>Consumptive abstraction available at least 50% of the time.</td>
</tr>
<tr>
<td></td>
<td>Consumptive abstraction available at least 70% of the time.</td>
</tr>
<tr>
<td></td>
<td>Consumptive abstraction available at least 95% of the time.</td>
</tr>
<tr>
<td></td>
<td>Not assessed</td>
</tr>
</tbody>
</table>

Table 3.7 Percentage reliability of consumptive abstraction.
Map 3.6 Water resource reliability in the Nene CAMS area expressed as percentage of time available.
4. How we manage abstractions in the Nene 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 Nene 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 20m³/day (4,400 gallons) from a ‘source of supply’ (river, stream, lake, well, groundwater, etc) must have an abstraction licence. The application process for abstraction is similar to the planning process in that we may require the application to be advertised and may require supporting environmental information. When considering the application we check that the quantities applied for and the purpose of the abstraction are reasonable, that there is sufficient water available to support it and that the potential impacts on the environment and other water users are acceptable. Depending on the outcome of our investigations we will issue a licence either as applied for, or with conditions that restrict the abstraction to protect the environment or other users. In certain cases we may have to refuse the application. Any applicant who is not happy with our determination (decision) has the right to appeal against it.

Each application is determined on its own merits

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

A licence does not guarantee that water is available

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

Abstractions are managed to protect the environment

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 status 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 status 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. 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 and area. These are summarised in Table 4.1.

<table>
<thead>
<tr>
<th>Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• All renewal applications have to meet the water efficiency test.</td>
<td></td>
</tr>
<tr>
<td>• Environment Officers’ undertaking compliance and enforcement checks will look for evidence of water being used efficiently.</td>
<td></td>
</tr>
<tr>
<td>• 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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 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.</td>
<td></td>
</tr>
<tr>
<td>• 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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nene</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• In the Upper Nene Sand and Gravel operators are encouraged to maximise the amount of local recharge they provide so that water is retained locally. A research paper on this subject has been produced by Symonds Group Ltd (Huxley et al, 2004).</td>
<td></td>
</tr>
<tr>
<td>• Rainwater harvesting is promoted 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.</td>
<td></td>
</tr>
<tr>
<td>• Spray irrigators in the lower Nene are provided with similar advice on water efficiency for spray irrigators and on irrigation scheduling.</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1 Water efficiency and demand management measures being implemented in the Nene 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

Environment Agency
In recognition of the 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.

17.5% of the licences in Nene CAMS are time limited. CEDs occur every twelve years. The next CED for Nene CAMS is March 2017 and the subsequent one is March 2029.

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 Nene catchment.

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 Nene 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.

Regulation is significant in the Nene catchment with three public water supply (PWS) reservoirs, plus some smaller private water storage reservoirs. In total there are 10 heavily modified or artificial water bodies in the Nene catchment, designated for water supply and storage purposes (see Table 4.2 and Map 4.1).

<table>
<thead>
<tr>
<th>Water body ID</th>
<th>Water body name</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB30538132</td>
<td>Hollowell Reservoir (PWS)</td>
</tr>
<tr>
<td>GB30538199</td>
<td>Pitsford Water (PWS)</td>
</tr>
<tr>
<td>GB30538230</td>
<td>Ravensthorpe Reservoir (PWS)</td>
</tr>
<tr>
<td>GB105032045470</td>
<td>Pitsford Arm of the Brampton Branch</td>
</tr>
<tr>
<td>GB105032045490</td>
<td>Ravensthorpe arm of Spratton Brook</td>
</tr>
<tr>
<td>GB105032045510</td>
<td>Hollowell Arm of Spratton Brook</td>
</tr>
<tr>
<td>GB105032045030</td>
<td>Castle Ashby Arm (Grendon Brook)</td>
</tr>
<tr>
<td>GB105032045150</td>
<td>Loddington Arm (Ise)</td>
</tr>
<tr>
<td>GB105032045360</td>
<td>Welton Village Trib, Whilton Branch of River Nene</td>
</tr>
<tr>
<td>GB105032045430</td>
<td>Sywell Brook.</td>
</tr>
</tbody>
</table>

Table 4.2 Heavily modified and artificial water bodies in the Nene CAMS area.

**Pitsford, Ravensthorpe and Hollowell reservoirs**

These public water supply reservoirs and the associated rivers have all been designated as artificial or heavily modified as they are stretches of water that have been changed due to the construction of a dam for the reservoirs. Pitsford and Hollowell reservoirs both have a statutory compensation release which will impact on the water availability of the downstream water body. The compensation release from the reservoirs should have beneficial impacts on the ecology and biology of the immediate downstream stretch of river.

Pitsford is the largest reservoir and receives flow from 20 percent of the St Andrew’s Mill catchment. The input flow to the reservoir also includes water transferred from the Kislingbury Nene at Duston Mill. Flow from 23 percent of the Merry Tom catchment is intercepted by the two smaller reservoirs, Hollowell and Ravensthorpe.

**Non-public water supply (PWS) water bodies**

The non-PWS water bodies on the Nene are primarily impacted by the establishment of smaller private lakes and reservoirs. It is harder to find out about the compensation releases, if there are any, from these and it unlikely that any are being monitored regularly. However, they may well be having a beneficial impact on the downstream water bodies in which case we would not want this to be compromised by increased abstraction.
Map 4.1 Heavily modified and artificial water bodies in the Nene 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 Nene 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.

There are a number of designated and non-designated sites of conservation interest in the Nene catchment. Many of these features are water-dependent (see Map 4.2). Of particular importance are the Upper Nene Valley Gravel Pits (SSSI, SPA and Ramsar site), Orton Pits (SSSI and SAC) and the Nene Washes (SSSI and SPA) all of which hold both national and international designations. Further information about the implications of these sites on water abstraction licensing can be found in Section 4.6.

4.3.4 Recreation and fishing

There are numerous recreational activities available throughout the Nene catchment, the most popular being angling, water sports and boating. Pleasure boating is the main recreational activity on the river, particularly during the summer months.

4.3.5 Navigation

The River Nene is an important regional navigation as it makes links between the Grand Union Canal and the River Great Ouse via the Middle Level. The navigable section is accessed inland, via the Grand Union Canal at Northampton and runs for 91.5 miles ultimately connecting with the Wash. The need to maintain suitable water levels in the river to allow the operation of locks and ensure adequate draft is an obvious issue for navigation.
Map 4.2 Designated water dependent conservation sites in the Nene 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).

![Diagram of level dependent environment](image)

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

The Nene CAMS contains level dependent environments (see Map 4.3). We have divided the area into units, known as level dependent management units (see Table 4.3). There are two significant level dependent environments in the Nene Catchment; the Nene Washes and the North Level, which consists of the Cross Guns and Dog in a Doublet LDMU. These areas discharge to the Nene below the tidal limit; however they are significantly fed with freshwater from the main river Nene. The two areas are largely level managed by the Environment Agency and the North Level Internal Drainage Board (IDB). There is also a major outflow from the Lower Nene to the Middle Level System which is in the Anglian region’s Central Area (outside the Nene catchment).

<table>
<thead>
<tr>
<th>Associated Level Dependent Environment</th>
<th>Level Dependent Management Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Level</td>
<td>Cross Guns</td>
</tr>
<tr>
<td>Dog in a Doublet</td>
<td>The Nene Washes</td>
</tr>
</tbody>
</table>

**Table 4.3 Level dependent environments and management units in the Nene CAMS area.**

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 4.4).

<table>
<thead>
<tr>
<th>Level Dependent Environment</th>
<th>Refer to assessment point</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Level</td>
<td>AP16 Nene Downstream Boundary (see Section 3.3.4)</td>
</tr>
<tr>
<td>The Nene Washes</td>
<td>AP16 Nene Downstream Boundary (see Section 3.3.4)</td>
</tr>
</tbody>
</table>

**Table 4.4 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. Information is also provided for the area north of Long Sutton which forms part of the Holbeach Marsh area (pre-dominantly in the Welland CAMS area) and is managed by the South Holland IDB.

**The North Level**

The main Internal Drainage Board (IDB) area in the lower Nene catchment is the North Level IDB which covers an area of approximately 31,970 hectares of which 82% is in the catchment of the River Nene and 18% is in the catchment of the River Welland. The main purpose of water abstraction in this area is spray irrigation. The North Level IDB uses a Water Level Management
Plan to operate the water levels in the IDB area effectively. The plan divides their area into nine small catchments for which there are numerous water control structures to regulate water levels in the summer. As a consequence of this, and the nature of the area, any restrictions are given as hands-off levels rather than flows. It was decided in the 1990s that no additional summer water was available from the Nene, whilst the resources of the drains were considered to be fully committed so no further summer licences could be granted.

**The Nene Washes**

The Nene Washes occupy a large trapped area between the tidal River Nene and Morton’s Leam where levels are maintained by a series of local impoundments. Water is diverted from the River Nene at Stanground Sluice through the Morton’s Leam, which is the main river and controlled by the Environment Agency. Stanground Sluice operates in high flow periods to divert water into the Nene Washes for flood storage. Water from Morton’s Leam then backs up the internal drains which cross the washlands. Flow from the Morton’s Leam is returned to the lower tidal Nene at Rings End Sluice, which subsequently discharges into the Tidal Nene. The Washes are usually flooded to varying depths in most winters. During the summer flow through Stanground Lock maintains levels in the Morton’s Leam and the Nene Washes for wet fencing, irrigation and conservation. The optimal summer support flow is estimated to be 15 Ml/d.

The Nene Washes is designated as a SSSI and Special Protection Area (SPA) for its bird interest, and a significant proportion is managed by the RSPB as a nature reserve. In addition to the site’s national and European Habitats Directive designations it is also designated under the Ramsar Convention on Wetlands of International Importance for bird interest and for the flora and invertebrates of its ditch systems. The continued importance of the site is dependent on the maintenance of regular winter flooding, together with controlled summer grazing and a high, but controlled, summer water table.

**Licence restrictions in the North Level and Nene Washes**

Licence restrictions in the LDMUs will be determined on a case-by-case basis. In most cases licences for abstraction from either Cross Guns, Dog in a Doublet or the Nene Washes will contain the following conditions:

1. A HOL condition set at the Dog in a Doublet sluice, and/or
2. A HOF condition set at Wansford (surface water assessment point 16), 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.

**Holbeach Marsh**

Surface water in the Holbeach Marsh area is primarily derived from rainwater or land drainage sources. Holbeach Marsh is characterised by a network of drainage ditches. However, the drains do not receive water from highland carriers and consequently the area is not considered to be a true level dependent area. Consequently, the area has not previously been assessed as part of the CAMS process. The area does however lie within the South Holland IDB who manage a number of drains in the area. For further information about water resource availability and the abstraction licensing strategy in this area please consult our Holbeach Marsh Abstraction Licensing Strategy (available from our Publications Catalogue).
Map 4.3 Level dependent environments in the Nene CAMS area.
4.3.7 Estuaries/coast

The River Nene discharges to The Wash embayment via Dog in a Doublet 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 km².

The Wash SSSI is located within the embayment and forms landward borders with Lincolnshire (to the west and south) and Norfolk (to the east). The SSSI is 63,135 ha, comprising mainly sandflats and mudflats. The Wash SSSI also forms part of The Wash and North Norfolk Coast marine SAC, The Wash SPA and The Wash Ramsar site.

The tidal range of The Wash is 6.5 metres, the highest on the North Sea coast of Britain. Despite freshwater inputs from the large catchment area, marine processes dominate the physical and biological character of the embayment. Whilst natural freshwater flows are recognised to be low they are nonetheless important to over-wintering birds. The Wash plays an extremely important role in relation to the wider coastal and marine environment of the region.

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 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. See Section 4.6 for more information.

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. Table 4.5 provides a guide to the potential for trading in water bodies of a particular CAMS water resource availability colour, as shown on Maps 3.2 – 3.5.

<table>
<thead>
<tr>
<th>CAMS water resource availability colour</th>
<th>Our approach to trading</th>
</tr>
</thead>
<tbody>
<tr>
<td>High hydrological status</td>
<td>Opportunities for trading water rights will be limited</td>
</tr>
<tr>
<td>Water available for licensing</td>
<td>Allow trades of recent actual abstraction and licensed abstraction, but little demand for trading expected within water body as water available for new abstractions.</td>
</tr>
<tr>
<td>Restricted water available for licensing</td>
<td>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</td>
</tr>
<tr>
<td>Water not available for licensing</td>
<td>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.</td>
</tr>
<tr>
<td>HMWBs</td>
<td>Opportunities for trading will depend on local operating agreements and local management.</td>
</tr>
</tbody>
</table>

Table 4.5 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 lead the revocation of existing abstractions in order to achieve a sustainable abstraction regime. Within the Nene CAMS there are five 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 nationally are failing to support WFD good ecological status due to pressures from over-abstraction.

Habitats Directive

In accordance with the UK 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 Nene CAMS the following Habitats Directives sites are considered:

- The Wash SSSI, SAC and SPA - Exceptional biological interest including: high numbers of wintering waterfowl; breeding seals; and salt marsh and shingle habitats.
- The Nene Washes SSSI and SPA - Important for wintering and breeding wildfowl.

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

## Glossary of terms

<p>| <strong>Abstraction</strong> | Removal of water from a source of supply (surface or groundwater). |
| <strong>Abstraction licence</strong> | The authorisation granted by the Environment Agency to allow the removal of water. |
| <strong>Aquifer</strong> | A geological formation that can store and transmit groundwater in significant quantities. |
| <strong>Assessment point (AP)</strong> | Point at which the flow from upstream catchment is assessed. |
| <strong>Borehole</strong> | Well sunk into water bearing rock from which water will be pumped. |
| <strong>Catchment</strong> | 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. |
| <strong>Compensation release</strong> | Water released from reservoirs to maintain a flow in the river downstream. |
| <strong>Designated water dependent sites</strong> | Legally defined nationally and internationally important sites potentially affected by water management or water quality issues. |
| <strong>Discharge</strong> | The release of substances (i.e. water, sewage, etc.) into surface waters. |
| <strong>Environmental flow indicator (EFI)</strong> | Flow indicator to prevent environmental deterioration of rivers, set in line with new UK standards set by UKTAG. |
| <strong>EU Water Framework Directive (WFD)</strong> | 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). |
| <strong>Full licence</strong> | A licence to abstract water from a source of supply over a period of 28 days or more. |
| <strong>Gauging station</strong> | A site where the flow of a river is measured. |
| <strong>Groundwater</strong> | Water that is contained in underground rocks. |
| <strong>Hands-off flow (HOF)</strong> | 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. |
| <strong>Hands-off level (HOL)</strong> | A river flow or borehole (groundwater) level below which an abstractor is required to reduce or stop abstraction. |
| <strong>Hydrology</strong> | The study of Earth’s water, in particular of water under and on the ground before it reaches the ocean or before it evaporates. |
| <strong>Impoundment</strong> | 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. |
| <strong>Internal Drainage Board (IDB)</strong> | A local land drainage authority with powers to raise finance and do works. |</p>
<table>
<thead>
<tr>
<th><strong>Irrigation</strong></th>
<th>The artificial distribution and application of water through man made systems in order to stimulate crop growth.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level dependent environment (LDE)</strong></td>
<td>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 winder and provide an irrigation resource during summer.</td>
</tr>
<tr>
<td><strong>Licence determination</strong></td>
<td>A decision by the Environment Agency on what terms to grant or refuse a licence application, by reference to regulatory powers and duties.</td>
</tr>
<tr>
<td><strong>Minimum residual flow (MRF)</strong></td>
<td>The flow set at a river gauging station to protect downstream uses. When flow falls below this level controlled abstractions are required to cease.</td>
</tr>
<tr>
<td><strong>Natural flow</strong></td>
<td>The river flows that would exist in the absence of any artificial impacts.</td>
</tr>
<tr>
<td><strong>Protected right</strong></td>
<td>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 m³/d.</td>
</tr>
<tr>
<td><strong>Public water supply (PWS)</strong></td>
<td>Term used to describe the supply of water provided by a water company.</td>
</tr>
<tr>
<td><strong>Ramsar site</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Review of Consents</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Revocation</strong></td>
<td>The cancellation of a licence and all associated rights and benefits.</td>
</tr>
<tr>
<td><strong>Site of Special Scientific Interest (SSSI)</strong></td>
<td>An area given a statutory designation by Natural England of the Countryside Council for Wales because of its nature conservation value.</td>
</tr>
<tr>
<td><strong>Special Area of Conservation (SAC)</strong></td>
<td>An area classified under the EC Habitats Directive and agreed with the EU to contribute to biodiversity by maintaining and restoring habitats and species.</td>
</tr>
<tr>
<td><strong>Special Protection Area (SPA)</strong></td>
<td>An area classified under the EC Birds Directive to provide protection to birds, their nests, egg and habitats.</td>
</tr>
<tr>
<td><strong>Surface water</strong></td>
<td>This is a general term used to describe all water features such as rivers, streams, springs, ponds and lakes.</td>
</tr>
<tr>
<td><strong>Time limited licences</strong></td>
<td>Licence with specified end date.</td>
</tr>
<tr>
<td><strong>Transfer licence</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Water body</strong></td>
<td>Units of either surface water or groundwater at which assessments are completed for WFD.</td>
</tr>
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## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AODN</td>
<td>Above Ordnance Datum Newlyn</td>
</tr>
<tr>
<td>AP</td>
<td>Assessment Point</td>
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<tr>
<td>AWB</td>
<td>Artificial Water body</td>
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<tr>
<td>CAMS</td>
<td>Catchment Abstraction Management Strategies</td>
</tr>
<tr>
<td>CED</td>
<td>Common End Date</td>
</tr>
<tr>
<td>Defra</td>
<td>Department of Environment Fisheries and Rural Affairs</td>
</tr>
<tr>
<td>EA</td>
<td>Environment Agency</td>
</tr>
<tr>
<td>EFI</td>
<td>Environmental Flow Indicator</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FL</td>
<td>Full Licensed (scenario)</td>
</tr>
<tr>
<td>GEP</td>
<td>Good Ecological Potential</td>
</tr>
<tr>
<td>GES</td>
<td>Good Ecological Status</td>
</tr>
<tr>
<td>GW</td>
<td>Groundwater</td>
</tr>
<tr>
<td>HES</td>
<td>High Ecological Status</td>
</tr>
<tr>
<td>HMWB</td>
<td>Heavily Modified Water Body</td>
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<tr>
<td>HoF</td>
<td>Hands off Flow</td>
</tr>
<tr>
<td>HOL</td>
<td>Hands off Level</td>
</tr>
<tr>
<td>IDB</td>
<td>Internal Drainage Board</td>
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<tr>
<td>LDE</td>
<td>Level Dependent Environment</td>
</tr>
<tr>
<td>LDMU</td>
<td>Level Dependent Management Unit</td>
</tr>
<tr>
<td>Ml/d, Ml/day</td>
<td>Ml = megalitres = 1,000,000 litres = 1,000 cubic metres = 1,000 m³ = 220,000 gallons</td>
</tr>
<tr>
<td>maOD</td>
<td>Metres above ordnance datum</td>
</tr>
<tr>
<td>MRF</td>
<td>Minimum Residual Flow</td>
</tr>
<tr>
<td>NFU</td>
<td>National Farmers’ Union</td>
</tr>
<tr>
<td>PWS</td>
<td>Public water supply</td>
</tr>
<tr>
<td>Q95</td>
<td>The flow of a river which is exceeded on average for 95% of the time.</td>
</tr>
<tr>
<td>RA</td>
<td>Recent Actual (scenario)</td>
</tr>
<tr>
<td>RSA</td>
<td>Restoring Sustainable Abstraction</td>
</tr>
<tr>
<td>RBMP</td>
<td>River Basin Management Plans</td>
</tr>
<tr>
<td>SAC</td>
<td>Special Area of Conservation</td>
</tr>
<tr>
<td>SPA</td>
<td>Special Protection Area</td>
</tr>
<tr>
<td>SSSI</td>
<td>Site of Special Scientific Interest</td>
</tr>
<tr>
<td>UKTAG</td>
<td>United Kingdom’s Technical Advisory Group</td>
</tr>
<tr>
<td>WB</td>
<td>Water body</td>
</tr>
<tr>
<td>WFD</td>
<td>Water Framework Directive</td>
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